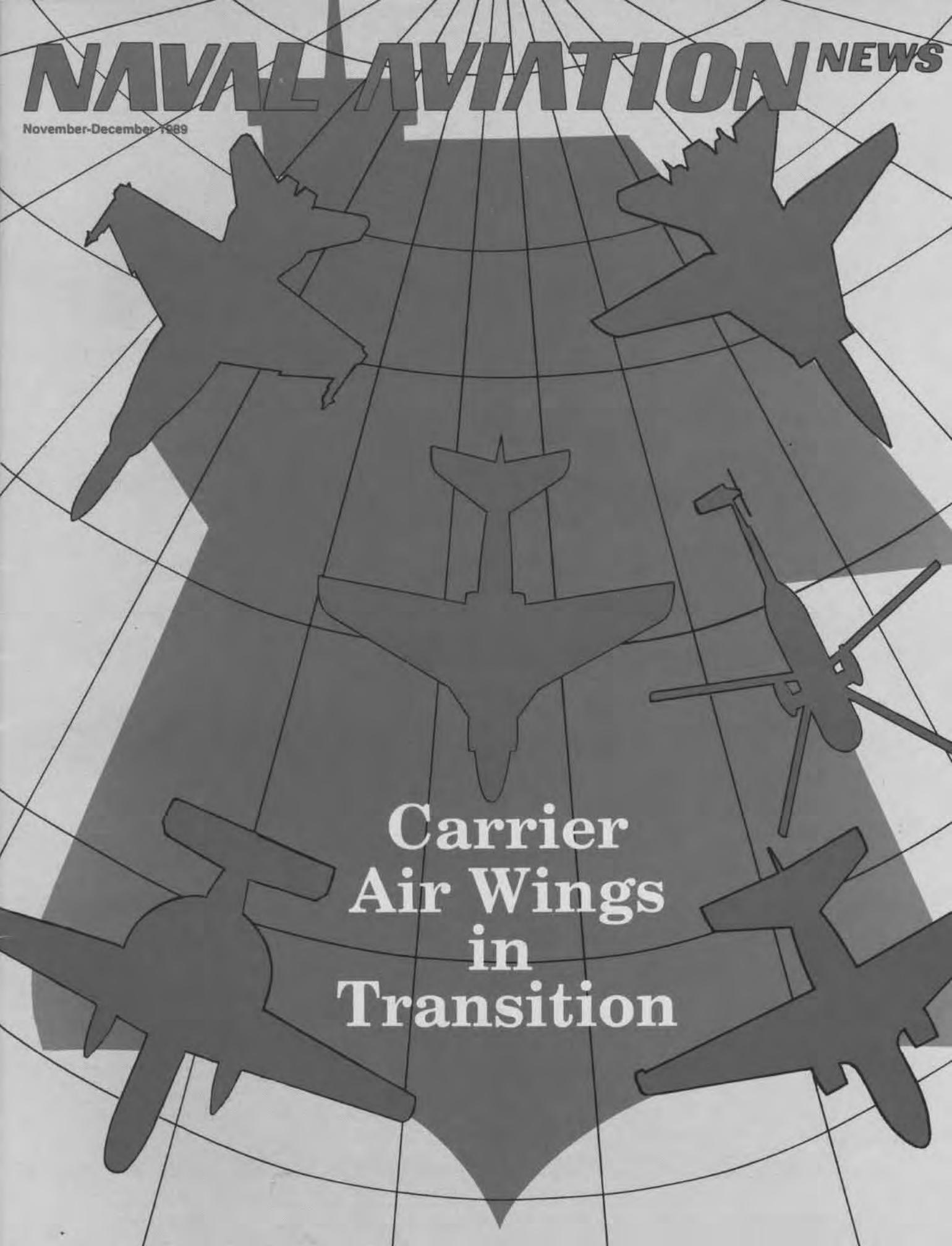


# NAVAL AVIATION NEWS

November-December 1989



## Carrier Air Wings in Transition

# NAVAL AVIATION NEWS

Oldest U.S. Navy Periodical

Volume 72, No. 1

**Editor's Note:**

The staff of *Naval Aviation News* endeavors to make each issue worthwhile to read. In our role as the voice of Naval Aviation, we are presently expanding the coverage of the news which is of interest to Naval Aviation personnel and the public. We have no monopoly on wisdom; your articles, photographs, comments, and criticisms are always welcome. We need your help to serve you better.

*R.R. Burgess*  
 LCdr. Rick Burgess

**Flagship Publication of Naval Aviation**

Vice Admiral Richard M. Dunleavy Assistant Chief of Naval Operations  
 (Air Warfare)

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COVERS – Front: NANews Art Director Charles Cooney depicted some of the aircraft in today's carrier air wing. Back: PH1(AC) Scott M. Allen, Alexandria, Va., won honorable mention in the fifth bimonthly ANA photo contest with this shot of an A-6 spot checker giving the thumbs-up before launch aboard *Forrestal*.

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By Vice Admiral Richard M. Dunleavy, ACNO (Air Warfare)

## Make Every Sortie Count

Few things are as elusive in peacetime as military readiness. It's like trying to run a hospital with no patients. Can you imagine doctors maintaining their skill without patients to practice on? Developing and maintaining a warrior's skill in peacetime against an ever-changing threat is perhaps an even more daunting challenge.

Over the past decade, Naval Aviation has enjoyed the enthusiastic support of the American people, which was translated into budget dollars to fund the ships, planes, facilities and people needed to maintain an unprecedented peacetime combat readiness. As we enter the 1990s, however, the growth of Naval Aviation has flattened. The public's perception that the cold war is thawing has raised questions about the need for our current level of defense spending. The political pressures to divert tax dollars from defense programs are greater than ever.

The Chief of Naval Operations and I are working hard to see that Congress understands the need of Naval Aviation to maintain readiness. The "elephants" here on the OP-05 staff are pushing hard to find the funds to get the flight hours and provide the training airspace needed by our crews to sharpen their skills.

Several initiatives are under way to increase the availability of tactical training airspace for Navy

and Marine aircrews. A new range, the Mid-Atlantic Electronic Warfare Range, is being set up at MCAS Cherry Point, N.C. This range will be equipped with the Tactical Air Crew Training System (TACTS), the backbone of the Navy's tactical air combat training. We are also working with the Air Force to iron out hardware and software differences so that we can use each other's ranges. This joint-use initiative will expand the available training airspace.

In the antisubmarine warfare arena, we're expanding and upgrading the underwater tracking ranges at St. Croix in the Virgin Islands and at Barking Sands, Hawaii. The new telemetry and other improvements will give our antisubmarine warfare aircrews more realism and more useful on-station performance critiques.

Even with all the efforts of our shipmates in Washington, in the final analysis, the combat readiness of Naval Aviation lies with the leadership at the squadron level. The C.O. must hawk the flight schedule to ensure that precious flight hours are used to train crews to fight. The ops boss has to schedule crews to take advantage of every training opportunity. Flight

leaders, mission commanders and instructors must make every flight hone the edge of our fighting skills. Proper planning of at-sea periods will get us the traps we need to fly safely day and night. No boring holes in the sky - make every sortie count!

When the operators and the staffs work together as a team, our hard-won flight hours are used to the best advantage. We owe it to ourselves, to the Navy, and to the taxpayer to make every dollar spent worthwhile. We're still learning to do more with less; we cannot afford waste. The country is depending on us; we won't let them down. I expect you to make readiness to fight your number one priority. The bottom line is still bombs on target, missiles up tailpipes, and torps on subs. You're doing great. Keep strokin'. ■



## Moonless Sonata

It was a moonless, winter night in the Mediterranean and the aircraft carrier's deck was pitching a bit. The ship's crew had enjoyed a liberty port and the rusty air wing was tuning up to reach battle-ready standards after the layoff. This was the first night operation since leaving port. Gradually, as the evening went on, the fliers were becoming smoother and voices that earlier were tense had become calmer.

Near the end of the last cycle, however, a helo pilot declared an emergency. He was vectored in for approach as the deck crew prepared for him. Over the amplifier the air boss said, "I need an LSE [landing signal enlisted], chocks and chains, spot three and a half for emergency landing!"

A young LSE raced across the flight deck as the air boss reiterated, "LSE, spot three and a half, right now!" As the LSE arrived on station he had the incoming aircraft in sight. It was on glideslope and centerline. Then, for some reason, crewmen motioned frantically at the LSE as he was waving the approaching aircraft lights toward the spot. He heard no warnings over his Mickey Mouse ears but sensed something was wrong. Finally, a flight deck chief rushed out and pulled the confused LSE out of the landing area. A short time later an A-6 screamed across the deck to an arrested landing.

From the tower came the call, "OK, A-6 clear the landing area. LSE, chock and chains to spot three and a half for arriving helo."

The LSE looked up toward the tower, shrugged, then raced back into position for the incoming emergency helo which landed safely.



**Grampaw Pettibone says:**

**Expect the unexpected. In carrier aviation it comes with the territory, as this LSE found out. Whether workin' out the kinks after time on the town, or doin' your thing when the wing is back in the groove, the**

*Sloppy Pilots!  
Get Lost!*



**nature of duty on the roof is its unpredictability – sometimes, anyway.**

**Hats off to the LSE who was doing his job and hats off to the chief who pulled him to safety. As to the air boss? Maybe not hats off to him this time around. But he's also doing his job and there's none tougher in Naval Aviation. That's why when you're on the flight deck you've gotta think like Indiana Jones – as if somethin' bad is comin' at you from weird angles and at weird times. And, on**

**occasion, that somthin' is a get-out-of-my-way-or-I'll-crush-you, air-breathin' flyin' machine!**

## Toeing the Threshold

The P-3C *Orion* was on a functional test flight following an Update III retrofit modification. The aircraft had not flown in nearly three months. Problems were encountered during the flight which would not permit successful conclusion of the test but the crew elected to remain airborne to finish as many equipment checks as possible. One discrepancy was a variance of 6 to 10 knots between the MP (mishap pilot) and MCP (mishap copilot) indicated airspeed (IAS) indicators.

Approaching NAS for landing the ground controller cautioned, "The first 2,000 feet of runway 27 are closed. There're 6,000 feet remaining." The pilots knew that construction was under way at the end of the runway and, in fact, had passed the area while proceeding for takeoff. They acknowledged the warning and continued the approach, their first ever to this particular runway. There was a right-to-left crosswind.

Because of the airspeed discrepancy the copilot issued readings every 10 or so seconds to the pilot. The pilot, concentrating on the landing sequence, mentally filtered



out many of these calls.

The right mainmount touched down in dirt about 80 feet short of the paved runway surface. The left mainmount touched down in dirt 15 feet short of the hard surface. Both wheels dug shallow furrows in the soil before impacting the end of the paved surface. The port mainmount broke off. The nose wheel did not touch down. The MP waved off and after further deliberation landed at another naval air station nearby with port gear missing, starboard mainmount extended but indicating "unsafe," and nose gear up. There were no injuries. Damage to the P-3 exceeded a million dollars.



**Grampaw Pettibone says:**

Lot of shoulda's here. The MP and MCP shoulda communicated better on final. Which means they shoulda had a better briefing on emergency and "pilot to copilot" comm procedures. That highfalutin' but important term – cockpit resource management – comes to mind and has meaning here. Comin' down the slope the MCP was so concerned with passin' on airspeed info, his outside scan pattern was reduced. Meanwhile the Orion is headin' for the wrong touchdown point even though it's the one the pilot was actually aimin' for.

The air station shoulda marked the construction area properly. Original runway markings were not removed or marked with a yellow X, like the book says. Old touchdown zone markings and a fixed distance marker were still located in the closed first 2,000 feet. It was a late afternoon landing and sun position worked against the Orion by creating a washout of color differentiation. On top of that the coloration, texture and shading of the soil in the construction zone looked like the concrete pavement nearby. Also, the construction area shoulda been outlined by day with yellow flags (at night with red lights). But it wasn't.

The MP had a long day. He'd

like your type



been up and workin' for 11 straight hours. He had orders to a new duty station, was in the process of settlin' on his house and his wife was expectin' their first child. The MCP was relatively inexperienced, which didn't help either. Add to the above the matter of the IAS differential and the attention it consumed and there ain't enuff awareness left to notice big trouble ahead.

Such can happen to you. Don't let it!

### Bronco Bustin'

A section of OV-10 *Broncos* had completed simulated paradrops and were returning to base via low-level navigation. The leader had briefed a minimum altitude of 500 feet for this leg of the flight. He also told number two to remain three minutes in trail.

Lead was at 500 feet when he observed his wingman about a half mile behind him, radically maneuvering his aircraft across lead's flight path and executing vertical rolling maneuvers. The wingman broke the 500-foot minimum altitude a

number of times during these maneuvers.

Lead lost sight of number two for a time then picked him up again as he was in an extremely nose-low attitude passing through 500 feet. At the last moment the *Bronco* "squatted" but still struck the ground. The pilot and aerial observer were killed instantly.



**Grampaw Pettibone says:**

Leaders, lead! When you see a wingman bending a machine around against the regs, stop the show.

Even though number two closed up a bit, why brief him to stay three minutes in trail. That's nine miles in the *Bronco*! Hard to maintain control from that distance.

Violators of regulations may be friends and shipmates, but if you're responsible for the flight you can't stand pat when "sins" take place. Ole Gramps believes that loyalty among Naval Aviators is, and should be, second to none. But loyalty works both ways, senior to junior, junior to senior. And loyalty to flathattin' rules goes beyond rank.

## New TACAMO Enters Fleet Service



Boeing Aerospace

A Boeing E-6A TACAMO aircraft with two trailing wire communications antenna extended.

VQ-3 took delivery of two Boeing E-6A *Hermes* on August 3, 1989, at Seattle, Wash. The arrival of the E-6A marks the fleet entry of the newest generation TACAMO (take charge and move out) aircraft. Based on the Boeing 707/E-3 airframe, the *Hermes* will eventually replace the Lockheed EC-130Q *Hercules* in both VQ-3 and its Atlantic Fleet counterpart, VQ-4. The 16 E-6As that will be in service by June 1991 have an aerial refueling capability; one *Hermes* in each fleet will remain airborne at all times to provide a communications link between the National Command Authority and fleet ballistic missile submarines.

The EC-130 has served in the TACAMO role for over 20 years. Its replacement has upgraded avionics and increased speed and range.

### ComTacSuppWing One Disestablished

Commander, Tactical Support Wing One (CTSW-1) was disestablished on October 1, 1989, at NAS Norfolk, Va., after over 16 years of service to the fleet. Established in July 1973, CTSW-1 provided an umbrella organization to direct and support a wide

variety of Naval Aviation squadrons, some of them one of a kind, stationed all along the East Coast, the Caribbean and the Mediterranean.

The missions assigned to CTSW-1 squadrons – everything from delivering mail to carriers to towing targets – were so diverse that the only common ground shared by the units was their mission to support the fleet. Initially established with nine squadrons, CTSW-1 detached the same number as it disestablished, although only four of them are the same ones initially assigned to the wing in 1973.

New reporting seniors for CTSW-1's units are as follows: ComFAirMed: VQ-2, VR-22, VR-24

ComCAEWing-12: VRC-40  
ComFitWing-1: VC-8, VC-10  
ComLATWing-1: VAQ-33  
ComHelTacWing-1: VC-6  
ComPatWingsLant: VQ-4

CTSW-1's last commander was Capt. James J. Drew.

### VAK-208 Disestablished: Last Reserve Whales Retired



PHO David R. Arm

Two KA-3Bs of VAK-208 in 1982.

In ceremonies held at NAS Alameda, Calif., on September 30, 1989, VAK-208 was disestablished as the last Navy squadron dedicated solely to the mission of aerial refueling. VAK-208 provided aerial refueling and pathfinder support as part of Reserve Carrier Air Wing 20 since its establishment on July 31, 1970, as VAQ-208. It was redesignated VAK-208 on October 1, 1979.

VAK-208's disestablishment

also marks the retirement of the KA-3B variant of the venerable Douglas *Skywarrior* – affectionately called the "Whale" – from the Naval Air Reserve. Modified from the A-3B during the mid-sixties as a dedicated tanker, the KA-3B and similar EKA-3B were credited with saving hundreds of Navy aircraft from fuel exhaustion incurred during air strikes in the Vietnam conflict. A small number of KA-3Bs remain in service with VAOs 33 and 34.

The aerial refueling role in the reserve air wings is being assumed by VAs 304 and 205 as they transition to the A-6E and KA-6D *Intruder*.

Cdr. A. J. Kisela was the last commanding officer of VAK-208.

### Reserves Modernize with Prowlers

The Naval Air Reserve reached another milestone in its program of achieving fleet compatibility with the June 1989 delivery of a Grumman EA-6B *Prowler* to VAQ-309 at NAS Whidbey Island, Wash.

VAQ-309 has flown the EA-6A *Intruder* since its establishment on December 1, 1979, as the electronic warfare squadron assigned to the West Coast's Reserve Carrier Air Wing 30. With the arrival of the EA-6B, VAQ-309's transition will mark the first time in history that a reserve air wing is entirely compatible with air wings in the active fleet.

Although the EA-6A has been deployed aboard carriers as a Marine Corps augmentation to several air wings, it has never been used by front-line Navy fleet VAQ squadrons.

VMAQ-4, the Marine reserve electronic warfare squadron, has also received EA-6Bs. VAQ-209, the East Coast counterpart to VAQ-309, is slated to transition to the *Prowler* as well.

### VFMT-401 Trades Lions for Tigers

The *Snipers* of VMFT-401 commenced transition in May 1989 to their new aggressor aircraft, the Northrop F-5E *Tiger II*, transferring their leased F-21A *Kfirs* (Young Lion) back to Israel.

VMFT-401, a reserve squadron based at MCAS Yuma, Ariz., operated the F-21A from the squadron's activation on March 21, 1986, until September 22, 1989, using the Israeli-built fighter to provide realistic aerial combat training for American aircrews. The F-21A, which was also used until April 1988 by VF-43 at NAS Oceana, Va., was leased by the Navy from Israel for the sole purpose of providing aggressor services.

Receiving the first of 12 ex-USAF F-5Es on June 19, 1989, VMFT-401 has sent its pilots through a training syllabus that includes flights in dual-seat F-5Fs operated by VFA-127, a Navy aggressor squadron at NAS Fallon, Nev.

Coincidentally with the transition, production of the F-5/T-38 series ended in July with the delivery of the final three F-5Es to Singapore. Northrop's F-5 program was, at 25 years, the longest running fighter production program in U.S. history, with the F-5 serving in 31 countries. The Navy has used both the F-5 and the similar T-38 in the aggressor role. The T-38 was also flown at the U.S. Naval Test Pilot School.

### P-3 Production Winds Down with Arcturus

Lockheed has begun production on the final lot of P-3 *Orions* with the last scheduled to depart the line at Palmdale, Calif., in September 1991. The lot includes two P-3Cs for the U.S. Navy, three P-3Cs for the Pakistan

navy, and three examples of a new model for the Canadian Armed Forces, the CP-140A *Arcturus*.

The CP-140A will be a derivative of the CP-140 *Aurora*, 18 of which Canada operates in the antisubmarine role. The *Arcturus* will be used primarily for military, environmental, maritime and arctic surveillance, and fisheries patrols. Following delivery, the CP-140A airframes will be modified into the *Arcturus* configuration in Nova Scotia.

The delivery of the CP-140As will end P-3 production at Lockheed with a total of 644 aircraft delivered since the program began 30 years ago. Production continues under license in Japan by Kawasaki Industries for the Japanese Maritime Self Defense Force. The P-7A will follow the P-3 on the Lockheed line.

### Super Stallions Join UDP

CH-53E *Super Stallions* deployed to Okinawa with HMH-462 in July 1989 as part of the Unit Deployment Program (UDP) for the first time. Five CH-53Es to be based in Japan permanently, drawn from HMHs 465 and 466 at MCAS El Toro, Calif., were transported aboard three USAF C-5s.

The *Super Stallions* will be flown by Marines from HMHs 465 and 466 on a six-month rotational basis coinciding with the CH-53A/D squadron rotation. HMH-462 is the first CH-53A/D unit to have a CH-53E detachment, making it HMH(C)-462, with the "C" denoting "composite." All previous CH-53E deployments to WestPac have been with ship-based composite HMM squadrons equipped with the CH-46 *Sea Knight*.

### Advanced Interdiction Weapon System



McDonnell Douglas Corporation

An artist's rendering shows the Advanced Interdiction Weapon System being launched from an F/A-18. The baseline design is an aerodynamically efficient, inertially guided glide weapon that can perform a variety of missions.

The Naval Air Systems Command awarded the McDonnell Douglas and Hughes Aircraft team a contract for the demonstration and validation phase of the Advanced Interdiction Weapon System's (AIWS) development. The AIWS is a low-cost, highly capable, multipurpose family of air-launched weapons designed for short to medium-range standoff missions. The system is scheduled for use in the mid-1990s.

### Antarctic Herc Comes Home



This Lockheed ski-equipped Hercules comes home to the Pacific Missile Test Center, Point Mugu, Calif., after a long-delayed flight from Antarctica where the LC-130 was buried in the ice for 16 years. (For the story, see NANews, May-June 1988, p. 14.)

## Firehawks Fly the New HH-60H

The *Firehawks* of Helicopter Combat Support Special Squadron (HCS) 5, NAS Point Mugu, Calif., received the Navy's first HH-60H strike rescue helicopters in July 1989. The new helo replaces the reserve squadron's HH-1Ks which were officially retired when HCS-5's last *Huey* gunship was presented to the Naval Aviation Museum in Pensacola, Fla.

Previously known as Helicopter Attack Squadron Light 5, the unit flew the HH-1K for 12 years in a special warfare operations support role. New high-tech weapons systems in use worldwide made it necessary to modernize the squadron's mission requirements and equipment. The HH-60H *Seahawk* is the culmination of this effort.

The only West Coast squadron flying the HH-60H, the *Firehawks* are now able to provide a primary response to contingency and wartime strike rescue operations and special warfare support. They are capable of developing aircraft detachments to any global location, operating from shipboard as part of a naval task force or independently from remote shore-based sites.

## Last CVL Saved from Scrapping

The sole survivor of nine *Independence*-class WW II light aircraft carriers (CVL) has been saved from scrapping and will serve as a maritime museum in New Orleans, La. The former flagship of the Spanish navy, *Dedalo* (R-01), was recently decommissioned after serving over 20 years in Spain. Prior to Spanish service, *Dedalo* was known as USS *Cabot* (CVL-28), which served with distinction in the

## ES-3A Aerodynamic Test Bed Flies



NS-3A 157993 made its first flight in its new ES-3A aerodynamic test bed configuration on September 7, 1989, over Palmdale, Calif. Lockheed will modify 16 carrier-based S-3A patrol aircraft to the new electronic reconnaissance configuration.

fast carrier task forces that contributed so heavily to victory in WW II.

*Cabot* was built on a cruiser hull and entered service in 1943 as the seventh of the *Independence* class, launching F6F *Hellcats* and TBM *Avengers* into combat over the Pacific. After service as an ASW carrier during the 1950s, *Cabot* was redesignated AVT-5 and stricken from the U.S. Navy inventory on November 1, 1959. Transferred to Spain in August 1967, the carrier operated in the sea control role, with export versions of the AV-8A *Harrier*, SH-3D *Sea King* and AH-1G *HueyCobra*. *Dedalo* was replaced in Spanish service by a new carrier, *Principe de Asturias*.

*Dedalo* was saved from scrapping by the combined efforts of RAdm. Gerald L. Riendeau, Chief of the Military Assistance Advisory Group of the Joint Military Group, Spain, the Madrid Council of the Navy League of the United States, and the Spanish navy.

## HSL-48 Established

In ceremonies at NAS Mayport, Fla., on September 7, 1989, HSL-48 was established as the Atlantic Fleet's fourth operational LAMPS (light airborne multipurpose system) MK III squadron. As part of Helicopter Sea Control Wing 3, HSL-48 will operate its SH-60B *Seahawks* from the decks of cruisers, destroyers and frigates in antisubmarine and antishipping roles in support of fleet operations.

HSL-48 is the latest addition to the steadily growing helicopter community in Naval Aviation, reflecting the increasing reliance being placed on rotary-wing aircraft. Since its introduction into the fleet, the SH-60B has greatly expanded the combat capability of the surface combatant, and has given the battle group commander greater flexibility in countering a threat from over the horizon.

HSL-48's first commanding officer is Cdr. Stephen Beal. The new squadron has chosen *Vipers* as its nickname, and its helicopters are assigned the tail code "HR."



USS *Cabot* (CVL-28) during WW II.

# Carrier Air Wings in Transition

By Bruce Powers

The fleet has always contained a mixture of types of carrier air wings (CVWs). It does today, too, and will for at least several more years. A course has been set by the Navy, however, toward eventual standardization of the CVWs into a single type.

The factors that govern the size and composition of the CVW are many and complex. The size of the carrier, of course, is the main limitation on the number of aircraft that can be embarked. The weight capacity of the installed catapult and arresting gear can restrict the operation of heavier aircraft. The size of the aircraft governs the number that can be efficiently handled by the flight deck or



USS John F. Kennedy's CVW-3, shown here in the experimental "all-Grumman" configuration, has now reverted to a Conventional-type wing.

stored on the hangar deck. Such factors as number of ready rooms and maintenance spaces also affect the organization of the CVW.

The threat that the carrier air wing is expected to counter governs the mix of aircraft types. The inventory availability of a given type of aircraft also influences the makeup of the CVW.

Because of diligent maintenance and extensive investment in upkeep and modernization, carriers are lasting 45 years or more. Thus, we have carriers in service today that were commissioned over 40 years ago. Once the largest carriers in the fleet, these ships – *Midway* and *Coral Sea* – are now the smallest and cannot embark air wings of the size found on more modern carriers nor efficiently operate the fleet's standard interceptor, the F-14. The advent of the F/A-18 allowed the Navy to equip *Coral Sea* with four F/A-18 and one A-6 squadron, a mix that made two deployments in the mid-1980s. This mix was modified to three F/A-18 and two A-6 squadrons, eliminating the KA-6 tankers (replaced by buddy

**Figure 1**

### Composition of Carrier Air Wings by Type

	Roosevelt	Conventional	Kennedy	Coral Sea	Transitional
F-14	20	24	24	–	20
F/A-18	20	24*	–	36	20
A-6	20	10	24	16	16
KA-6	–	4	4	–	–
EA-6	5	4	4	4	5
E-2	5	4	4	4	5
S-3	10	10	10	–	8
SH-3	6	6	6	6	6
<b>Total</b>	<b>86</b>	<b>86</b>	<b>76</b>	<b>66</b>	<b>80</b>

\* Some Conventional wings will operate A-7s until the A-7 is phased out in the early 1990s and replaced by F/A-18s.

stores carried on the A-6s). This air wing type, known as the Coral Sea CVW, now equips both *Coral Sea* and *Midway*. (See Figure 1 for the composition of the various CVWs described herein.)

With *Coral Sea* slated for retirement on April 30, 1990, and *Midway* to be decommissioned during FY 92, their air wings will be altered to include F-14s and S-3s, enabling *Abraham Lincoln* (CVN-72) and *George*



The Coral Sea-type wing will be phased out as USSs Coral Sea and Midway are decommissioned.



*Washington* (CVN-73) to embark air wings similar to those of their sister nuclear-powered carriers.

Vietnam combat experience and the retirement of the antisubmarine warfare carriers (CVSs) by the mid-1970s resulted in the "CV concept" by which the CVWs of the attack carriers (CVAs) absorbed the antisubmarine mission, and the CVAs were redesignated CVs. The resulting air wing, with ASW aircraft formed around a core of two F-14, one A-6, and two A-7 or F/A-18 squadrons, is known as the Conventional CVW and is the predominant type of carrier air wing in the fleet today.

In the early 1980s, the Navy began experimenting with the Conventional CVW and selected CVW-3 as the prototype Kennedy CVW, so named because it was embarked on *John F. Kennedy*. This carrier air wing type featured two larger A-6 squadrons (24 A-6s total) and deleted the two A-7 squadrons. It was unofficially known as the "Grumman" air wing because the vast majority of its aircraft (F-14, A-6, EA-6, E-2) were Grumman

USS Theodore Roosevelt's CVW-8 pioneered the Roosevelt-type air wing, which is the configuration all other CVWs will adopt.

products. CVW-2 aboard *Ranger* was also converted to a Kennedy CVW, CVW-3, however, has now reverted to a Conventional configuration, and CVW-2 will follow in FY 93 when *Ranger* is modified to operate the F/A-18.

A 1984 study by the staff of the Deputy Chief of Naval Operations (now Assistant CNO) for Air Warfare and the fleet resulted in the Notional CVW, now called the Roosevelt CVW. In 1987, CVW-8 was restructured for assignment aboard the newest CVN, *Theodore Roosevelt*, with a strengthened medium attack element (20 A-6s), while trimming the two F-14 and two F/A-18 squadrons to 10 aircraft apiece.

The advent of the F/A-18 in place of the A-7 allows this trimming because of the F/A-18's ability to augment the F-14 in the anti-air warfare role. Thus, the Roosevelt CVW has the ability to muster 40 fighters (20 F-14s and 20 F/A-18s) to counter an anti-air warfare threat or, alternatively, 40 attack aircraft (20 A-6s – or eventually A-12s – and 20 F/A-18s) to strike at enemy shipping and land targets.

The advent of the S-3B, with its ability to fire *Harpoon* missiles, also expands the war-fighting capability of the Roosevelt CVW. This flexibility is



The Conventional air wing, like the one shown here on USS *Constellation*, will give way to the Transitional type and eventually the Roosevelt CVW.

further enhanced by the addition of one more E-2 and EA-6. The Roosevelt CVW eliminates the need for KA-6 tankers because of the refueling capability of the S-3B and the buddy stores on the A-6.

The Roosevelt CVW has been chosen by the Navy as the form which all CVWs will eventually take. *Theodore Roosevelt* completed its initial deployment with this air wing in June 1989. However, because of shortfalls in A-6 and S-3 inventories and expectations regarding 1990's Congressional funding for carrier

aircraft procurement, the conversion of other air wings to Roosevelt CVWs has been deferred approximately seven years. As a stepping stone to an all-Roosevelt CVW force, the CNO decided in November 1988 on an interim form, an 80-aircraft air wing known as the Transitional CVW, the first of which will take shape during FY 90. This type is similar to the Roosevelt CVW, but has four fewer medium attack and two fewer fixed-wing antisubmarine warfare aircraft.

As 1990 begins, the carrier fleet will be equipped with nine Conventional, two Coral Sea, one Kennedy and one Roosevelt CVW (see Figure 2). Two reserve CVWs are also on hand, identical to their Conventional counterparts, except for the lack of S-3s. After the retirement of *Coral Sea* and *Midway* and conversion of CVW-2 from the Kennedy type when *Ranger* is configured to operate F/A-18s, the fleet will embody three CVW types. CVW-8 will continue as a Roosevelt CVW and, during the early 1990s, all of the Conventional air wings will become Transitional CVWs. With the transfer of USMC A-6Es to the Navy over the next five years, medium attack aircraft shortfalls in squadrons will be alleviated, thus enabling three more Roosevelt CVWs in FY 97 and a fifth Roosevelt CVW in FY 99. From that point, the ultimate goal of an all-Roosevelt CVW force will be achievable, making possible for the first time in history a single standard type of CVW in the fleet, with all the economic, training and operational benefits that come with standardization. ■

Figure 2

## Carriers and Air Wings in Sep 89 Fleet

Aircraft Carrier	Air Wing Assigned	
	Name	Type
<b>Atlantic Fleet</b> (8 carriers in inventory)		
Coral Sea (CV-43)	Coral Sea	CVW-13
Forrestal (CV-59)	Conventional	CVW-6
Saratoga (CV-60)	Conventional	CVW-17
Kitty Hawk (CV-63)	None assigned — carrier undergoing SLEP*	
America (CV-66)	Conventional	CVW-1
Kennedy (CV-67)	Conventional	CVW-3
Eisenhower (CVN-69)	Conventional	CVW-7
Roosevelt (CVN-71)	Roosevelt	CVW-8
<b>Pacific Fleet</b> (7 carriers in inventory)		
Midway (CV-41)	Coral Sea	CVW-5
Ranger (CV-61)	Kennedy	CVW-2
Independence (CV-62)	None assigned — will get CVW-14	
Constellation (CV-64)	Conventional	CVW-14
Enterprise (CVN-65)	Conventional	CVW-11
Nimitz (CVN-68)	Conventional	CVW-9
Vinson (CVN-70)	Conventional	CVW-15
Lincoln (CVN-72)	Under construction, delivery FY 90	

\* Service Life Extension Program, a 2.3 year refurbishment designed to provide an additional 15 years of service life. (CV 62 was the last CV to complete SLEP. CV-64 is next to start SLEP.)

# Women Military Aviators

## Women in Naval Aviation:

By JO2 Milinda D. Jensen

I think that the combat mission exclusion is really what's in the minds of women aviators. It excludes us from flying many of the combatant planes and that hinders our ability to perform our mission," said Lieutenant Colonel Kelly Hamilton-Barlow, USAF, President, Women Military Aviators, Inc. (WMA).

The combat exclusion statute was one of the major topics discussed during the fourth biennial WMA Convention held in Washington, D.C., over the Labor Day weekend. "The law excludes us [women] from having a true role in the defense of our country, which is what we all agreed to do when we enlisted. Women have always volunteered to serve their country. Our purpose for being here is to let the American people know that we understand the risks and we would like the opportunities to progress professionally in our careers," added Lt. Col. Hamilton-Barlow. Citing the Defense Advisory Committee on Women in the Services (DACOWITS) as one of their strongest supporters, convention members believe that it's just a matter of time before the law is changed.

"It is my personal conviction that Navy women, especially those in aviation and surface communities, will fight in our next war... The combat exclusion law will have to go away," emphasized Commander Rosemary Mariner, USN, X.O. of VAQ-34, NAS Point Mugu, Calif. (Cdr. Mariner was the guest military speaker on the combat issue.)

"In reality women have always suffered in war: a dead woman is no more and no less a tragedy than a dead man. That is cold, hard reality. You [women aviators] have to be intellectually honest with yourself and realize that until you share equally in the dangers and the risks, you're not pulling your fair share." Cdr. Mariner added.

Sharing experiences and common

problems was another focus of the convention, as the women took part in some informal "networking."

"I don't think it's good to isolate ourselves in the military because we're all officers, but there are issues and laws that are pertinent only to women, and those issues can be helped through networking," commented Navy Commander Jane O'Dea, Action Officer, Command, Control and Communications Systems Directorate, Joint Chiefs of Staff.

"I never had the chance for the comraderie, or for a mentor to go to for advice, mainly because there just weren't any other women senior role models in the ranks," Cdr. O'Dea added.

The interaction between past and present aviators rekindled the knowledge that women have been taking to the skies since Madame Elizabeth Thible - the first woman aviator in written history - as a passenger, ascended in a Montgolfier balloon over Lyons, France, in 1784. But most Americans are more familiar with the contributions women made during WW II.

"I learned to fly in my hometown of Sweetwater, Texas," reminisced Madge Moore, a WW II Women Airforce Service Pilot (WASP).

One of the first things her flight instructor did was to tell her to take her hands and feet off the controls. "The plane was flying by itself, so I knew that there wasn't anything to worry about," she said.

"There was a man in our town who had bought himself a plane. He needed to pay for that plane so he started selling 10 hours of flight time for 50 dollars. That was how I learned to fly," Moore added.

"On November 1, 1943, I reported for active service. I instructed in instrument engineering flights and also chauffeured nonrated officers in the basic trainer, a Vultee BT-13 *Valiant* (Navy SNV)," the WW II aviator remembered.

The WASP program was started in



Photographed in 1974 at NAS Corpus Christi, Texas, from left to right: Ensigns Rosemary Conatser Mariner and Jane Skiles O'Dea and Ltjgs. Barbara Allen Rainey and Judith Neuffer Bruner.

1942. Its purpose was to train women pilots to take over noncombat flying in order to free men for combat assignments. During the 27 months of operation, women aviators flew 77 types of aircraft, traveling over a distance of 9,224,000 miles. The planes ranged from the fastest fighters to the heaviest bombers.

In December 1944 the program was ended and the WASPs were disbanded. The WASPs had never been commissioned into military service, however, and it wasn't until November 1977, after much lobbying, that they were granted honorable

# 1989 Convention

## 15 Years



discharges and officially recognized as WW II veterans.

The convention made everyone involved keenly aware of the changes that have occurred in the history of women Navy fliers since WW II.

"Much has changed in 17 years," commented Cdr. Mariner. "For example, when I first came into the Navy, if you became pregnant you had to get out. When we first started flight training in 1973, we were told that women could not fly jets, could not carrier qualify or go aboard ships. Today, Navy women do all these things routinely," she added.

The program was established in 1972 when Chief of Naval Operations Admiral Elmo R. Zumwalt, Jr., announced that aviation training would open to women. The first eight students began flight training in 1973. Since that time women aviators have

accomplished milestones to challenge future female pilots and aircrews:

**1974:** The first woman Naval Aviator received her wings. In February, then-Lieutenant Barbara Allen Rainey earned her wings as the first woman designated a Naval Aviator. LCdr. Rainey died in an aircraft mishap on July 13, 1982.

**1978:** The first Navy woman qualified as a flight instructor. Then-Lieutenant Jane O'Dea was the first female flier to become a Navy flight instructor. Since then, Commander O'Dea has logged almost 3,000 military flight hours. She is the Navy's senior ranking woman aviator.

**1978:** NAS Moffett Field's VP-50 in California became the first patrol squadron to have women report for duty.

**1979:** The first woman Navy pilot became carrier qualified. Lieutenant Donna Lynn Spruill carrier qualified in a fixed-wing aircraft on June 20.

**1989:** The first woman was selected as director of operations at the Naval Aviation Depot, North Island, Calif. Cdr. Sharon Gurke currently serves in this position at the largest of six depots in the country.

There are numerous other contributions by women in the field of aviation, which brought about many changes.

"I've seen changes in the attitudes of men. They've grown up with us. They know that we've put up with much of what they put up with. In today's Navy the junior men are used to having women in leadership roles. It's all just a matter of time," said Cdr. O'Dea.

Cdr. O'Dea, as well as other active duty women aviators, have seen and been part of changes, but they all agree that more changes are needed.

"In the next four to five years, enough qualified men will not be available for recruiting. The corporations will be competing for their services. The military will have to go to the other 50 percent of the population [women]," said Cdr. Mariner.

"I think that we can all do the same

job, but I'll be the first to admit that men and women are different in many ways. With the current laws, women will never be fully integrated into the system. So, you have to learn to deal with reality and make a contribution as best you can," Cdr. O'Dea added. "Do a good job and establish a degree of credibility first. Then people will listen to what you have to say, and when you have the chance you can bring up issues that are important to you."

Other issues that were discussed included child care and family issues, with guest speaker Barbara Pope, Deputy Assistant Secretary for Family Support, Education and Safety, Office of the Secretary of Defense. Career options and leadership were also topics of discussion at the meeting.

This year's convention was the first time that all services were represented. Women Naval Aviators expect more involvement from their service in the future. "The word just needs to get around, and once other Navy aviators learn about the support that WMA provides, they'll want to be a part of it," said Lieutenant Commander Patricia Beckman, VS Department Head, NATC Paxtuxent River, Md.

Lt. Col. Hamilton-Barlow summed up, "Contacting people to attend was a bit of a problem. We had to find those aviators out in the field pretty much by word of mouth. The conference is held every two years; hopefully, in 1991, more women fliers will have heard about our association. We also hope to have international involvement at our next convention."

The conventioners are especially looking forward to participation from Canadian women aviators in 1991. Canada recently opened all of its combatant aircraft to women pilots.

With other countries pulling down restricted flight barriers to women and U.S. Navy women now entering the space program, the future looks bright for female aviators, who continue to soar to new heights. ■

For more information on Women Military Aviators, Inc., write to: WMA, Inc., P.O. Box 374, Lawrence, MA 01844-0374.

# Women Fliers Continuing the Tradition

By JO2 Milinda D. Jensen

Jacqueline Cochran became a leading female in aviation in December 1937 when she set a New York-to-Miami speed record. The following year she won the prestigious Bendix Trophy Race. At the beginning of WW II, Cochran took 25 U.S. women pilots to fly with the British Air Transport Auxiliary. After returning to the U.S., she became the head of the Women Airforce Service Pilots (WASPs).

Captain Joy Bright Hancock enlisted in the Navy as a yeomanette in WW I. In 1922 she moved to Washington, D.C., to work in public relations. She became the first full-time editor of the *Daily Aviation News Bulletin*, which changed its name to *Naval Aviation News* in 1943.



Hancock

Being a forerunner is nothing new for Commander Sharon Gurke, director of operations, Naval Aviation Depot (NADEP), North Island, Calif., the largest of six depots in the country. In June of this year Cdr. Gurke became the first female to hold her position. Positive experiences early in her naval career helped prepare her for this assignment. She was the first female officer ever assigned to a training squadron, VT-9, in Meridian, Miss. But the milestones didn't stop there. Cdr. Gurke accomplished another first in 1976 when she became the first female selected as an Aeronautical Engineering Duty Officer. In her current position at



Gurke

NADEP she believes that with the total support of managers who decide they want to follow her leadership, and everyone "across the board" working as a team, she can make a difference. "I'm here to help drive the train by directing priorities and providing a stimulus for improvement. We can be the best depot in Naval Aviation."

Commander Jane O'Dea was one of four active duty Navy women to enter Navy pilot training in 1974 and earn her Wings of Gold. Since that time she has achieved numerous



O'Dea

aviation qualifications: aircraft commander in the C-130 and C-1A aircraft, carrier qualification in the C-1A, Navy instructor pilot in the T-34, and mission commander in the EC-130 TACAMO aircraft. She is qualified for the TACAMO air warfare specialty and is the Navy's senior ranking woman aviator.

"My advice to younger women starting their careers would be to work as hard as you can to get the most qualifications that you can. The way to prove yourself is to get out there and

get good grades, good flight passes and be a professional at all times. Walk the straight and narrow. Do the best you can," emphasized the 15-year aviator.

Commander Rosemary Mariner earned her wings in 1974. She was the first women pilot to fly tactical jet aircraft, the single-seat A-4E/L *Skyhawk*. She has logged over 3,200 military flight hours in 15 different naval aircraft and has carrier qualified.

Cdr. Mariner earned her private pilot's license at 17 and graduated from Purdue University with a degree in aviation technology. She had FAA flight engineer and pilot ratings when she joined the Navy.

"You are in the service and that means sacrifice. Men have always made that sacrifice. You [women] have to be willing to make it, too," said the commander, who is currently serving as X.O. of VAQ-34, NAS Point Mugu, Calif. Cdr. Mariner will fleet up to skipper of that squadron next year.



Mariner

"... When I am asked why Navy women are succeeding, I recall the comments of the commanding officer of the destroyer tender *Acadia* when his ship returned to San Diego after a prolonged presence in the Persian Gulf to repair USS *Stark*. He was asked how important the women in his crew were to his mission and he replied, 'I couldn't have done it without them.' Women officers and enlisted are turning in similar performances today as they serve in demanding assignments afloat and ashore around the world. . . ."

excerpt from *All Hands*, September 1989, quoting Vice Admiral J. M. Boorda, Chief of Naval Personnel

# PRCM Stanley G. Crowley

## A Last Look from the Tip of the Spear

By JO1 Jim Richeson

There is much to be said about a sailor's career which spans a time when the Navy relied upon the gull-wing F4U *Corsair* to today's sophisticated F/A-18 *Hornet*.

These two aircraft are both important milestones in Naval Aviation. One symbolizes determination in conflict, while the other embodies peace through strength.

In Naval Aviation, many people learn their lessons in life and receive their education in survival from one of the meanest and most unforgiving teachers there is – the hard blacktop of an aircraft carrier's flight deck. It was on the deck of the attack carrier *Philippine Sea* (CVA-47), at the height of the Korean conflict, where Master Chief Parachute Rigger Stanley G. Crowley began his studies as a 19-year-old plane captain with Fighter Squadron (VF) 94.

He dropped out of the tenth grade at the age of 17 and joined the Navy in March 1951. "My dad left home when I was a kid, so my mom was a single parent and I can relate to many single parents today," Crowley said. "I used my dad's leaving home as an excuse to quit school. I shouldn't have quit. I was an A/B student all the way."

Today, at 55, Crowley has endured the rigors of sea duty and long family separations as a result of three consecutive Operation *Deep Freeze* assignments, and a one-year, unaccompanied tour as a technical advisor in Bandar Bushire, Iran, where he learned to speak Farsi. After 35 years of service, he ends his career as Commander Naval Air Force, Atlantic's (ComNavAirLant) Force Master Chief.

The master chief will be the first to tell anyone that the only casualty he suffered during his hitch with the Navy is the thick, curly clump of hair which he used to comb with pride as a young man. After 35 years, Crowley sports a very distinguished and thin shade of gray under his combination cap.

It doesn't take a sailor long to recognize the fact that Crowley does not fit the image of the old, crusty master chief who barks up and down the ship's passageways. He is outspoken but speaks softly as though he is making sure that his message is clearly understood. He carries a headful of wisdom which he imparts daily to sailors young and old.

"The toughest challenge I have to offer many sailors is to never intentionally offend another human being," Crowley remarked. "That's the crux of it. The keyword is *intentional*. We will always offend other people, from time to time, but do not do it intentionally," he added.

He pointed out how essential it is for a command master chief to be accessible. "Approachability is so important," Crowley said. "If the guy is not approachable, he's ruined half of his effectiveness. I remember when I was new to the game, watching another master chief, and seeing a kid come in and talk to him. 'Master chief, can I talk to you?' said the young sailor. 'Yeah, you can talk to me when you get a button on that shirt and a shine on those shoes,' that master chief curtly replied. 'Well, you know that the sailor is not going to come back again. Those young men and women have to be able to come up and say, 'I've got a problem.'"

Being the voice of many sailors under ComNavAirLant's chain of command, Crowley rarely passes up the opportunity to express his genuine concern for a sailor's quality of life and leadership.

"I think leadership is what you make it," he pointed out. "To me it's like baseball, bowling, playing the piano or saxophone – it's important to practice. You have to practice leadership. The guy who doesn't practice that particular talent isn't going to be as good as the guy who does.

"There are different styles in doing things," he went on. "Sometimes you have to come down hard on a guy and other times you just talk common sense to him. You learn that by



Airman Crowley in 1953.

experience through practice, which begins before you are even a third class petty officer."

He described tactful confrontation as an opportunity to practice leadership skills. "You have to respond to challenges. When you don't, you miss the opportunity to practice. You miss the opportunity to put this Navy on a footing where it has always been and where it ought to be," Crowley said.

He added, "Right is right. When you're right you've got the edge. The individual who habitually buckles in fear of intimidation – and it happens to all of us from time to time – isn't going to be a leader. Instead, fear becomes the habit rather than the tactful confrontation. The only way you'll know the consequences of your actions is to carry them out."

In 1985, Crowley received the Navy League's Admiral Claude V. Ricketts Award for his inspirational leadership. Many people have been impressed by the master chief's style of leadership, long before he was recognized by this award. Vice Admiral Richard Dunleavy, Assistant Chief of Naval Operations (ACNO) (Air Warfare) saw early on in his career that Crowley was a very effective leader.

Before becoming ACNO (Air Warfare) in May, VAdm. Dunleavy served as ComNavAirLant. He picked Crowley out of many candidates to fill the command's top enlisted billet. "I selected this man to be my Force Master Chief at AirLant because he can go into a command and take its pulse," VAdm. Dunleavy said. "He can offer assistance and advice and work the tough issues, sharing his advice with groups ranging from ombudsmen to junior officers. That is the mark of our professional corps of chief petty officers' exceptionally fine leadership and technical expertise."

Master Chief Crowley remembers the first time he met the admiral as a Survival, Evasion, Resistance and Escape (SERE) School instructor at NAS Brunswick, Maine.

"Admiral Dunleavy was a SERE student going through the training course in 1966 and I was one of the bad guys who caught him in the woods. I was a first class petty officer and he was a lieutenant commander — that was the first meeting," Crowley recalled. "The second was in 1973. He was on a Sixth Fleet carrier. He caught me in the passageway. I was a chief and he was a commander — a squadron skipper. He grabbed me and said, 'I got you now, you phony Russian.' He scared me, but the admiral said he was only kidding. He then took me down to the ready room and introduced me to some of his men and thanked me for the excellent training."

As a SERE instructor, Crowley's methods of training were also lauded by a number of Naval Aviators who were captured and spent several years as prisoners of war in Vietnam.

"Admiral Don Boecker was one of my students who came back. He was in Southeast Asia and found himself hung up in brush and surrounded by the Viet Cong. He turned around and ripped the lanyard that secured his equipment to himself. He is an example of what the adrenaline in your system is capable of doing, and we used him as a point of illustration to many of our students," Crowley said.

He continued, "These men came back and thanked us for the concepts we taught them at SERE school which really helped them resist enemy interrogation. Retired Navy Captain Jim Mulligan, now living in Virginia Beach, Va., spent seven years in Hanoi. Admiral Jeremiah Denton, another one of my students, was also captured and served seven years in Hanoi. There is an endless list of these men and they really make you feel good."

Ever since he was a young airman, Crowley has had a great deal of admiration and respect for the men who choose to be Naval Aviators. "Let's face it, the guys who choose that career are the same guys who rode the horses as knights back in the middle ages," he said. "They are the ones out there in the front facing the bullets."

Crowley was offered an opportunity to earn a commission as a Naval

Aviation Cadet at the end of the Korean campaign but decided not to pursue it. Instead, he got out of the Navy and earned his high school diploma from the Benjamin Franklin Veteran's Accelerated High School. Later, he worked as an underwriter for a Philadelphia insurance company. Crowley felt that he moved too fast, advanced too quickly, got bigheaded and ended up quitting a good job. Then he began job hopping.

"One day my wife and I were at a picnic. It was near NAS Willow Grove, Pa. The last bird I had worked on, in VF-94, was an FJ *Fury*, and two



PRCM S. G. Crowley

*Furies* launched out of Willow Grove right over our heads at the picnic area. I could smell the jet fuel. It was a windy day and I could feel the wind in my face. It made me feel like I was back on the flight deck," Crowley recalled. "I said to my wife, 'I'm going to go back in the Navy.' She said, 'O.K., go ahead.' "We had two kids and one on the way," he added.

Master Chief Crowley's marriage to the former Mary Ellen Hartnett of Philadelphia has lasted as long as his naval career. He pointed out that she has raised six children during those 35 years. "Family separation, for some people, is a troubling thing but it works for us. You might say that we've had a lot of minimoons as opposed to just reunions. She has always been a good homemaker and mother," he said. Crowley mentioned that his wife is very apprehensive about his retirement. "She knows how much I love the Navy. She is afraid that when I leave, it'll be like shutting down one of my banks and taking a cylinder out," the master chief added.

Crowley has an unyielding allegiance to Naval Aviation. He places the men, women and their aircraft at the very tip of the nation's spear. He remarked, "I think all of our forces are essential. Our carriers are

not going to operate without the support of the surface fleet because we need them for a protective perimeter. We need our submarine force just as well because the Soviet submarine force is the greatest threat we have today, and you have to counter it."

Crowley added, "Each of us in our own field has got to be parochial and, just like anything else, all of our sailors should feel they are the best. In Naval Aviation, I think we are the best."

He stressed that there is a complex difference between the *Corsair* and the *Hornet*. "There is the same complexity between the people you are dealing with today and the people we had during the era of the *Corsair*," Crowley explained. "It wasn't necessary for the people we had back then to be high school graduates, and you had a labor force that came from similar backgrounds to mine."

After he retires, Crowley would still like to see the Navy of the future keep up with the people issues. According to the master chief, the Navy and Marine Corps have taken the brunt of most of the action in the Persian Gulf and the Libyan crisis. The Navy's forward-deployed force is a weapon system whose number one mission is defense and protection of the United States.

He stressed that it is up to the individual sailor to educate the American public. "I think the American taxpayer has got to realize that the people we employ to pull the trigger on the gun, or to operate the tank and sail the ships, represent a cross section of America, and they are all our kids," the veteran said. "Regardless of their background or whether they're educated or uneducated, they are all of our kids. They are our sons and daughters, nephews and cousins and, if we don't treat them right, let's face it, you're not going to get the kind of defense you need when the chips are down."

VAdm. Dunleavy said, "The rewards that Master Chief Crowley most cherishes are the many young people he has touched ... the people to whom he has made a difference. To many of his peers, he is a leader. To most of his shipmates, the master chief is a very good friend. One thing is certain. While serving with the men and women at the tip of the spear, Crowley has increased the wisdom that he began learning on carrier flight decks. ■



# The Root Rescue

Root's Cessna Centurion as seen from the cockpit of a Marine A-6 from MCAS Cherry Point, N.C.

transferred to FACSFac.

During all this and through some outstanding ingenuity, the FACSFac duty crew began making calls for assistance. The first call went to an Air Force crew out of Langley AFB, Va. Some F-15s were flying but, unfortunately, were unable to assist because of fuel constraints. Next notified were two Marine F/A-18 *Hornets* that had just departed MCAS Cherry Point, N.C., headed for a practice bombing mission. They responded to the call for help about the time the Army C-12 was breaking away.

Meanwhile, the Air Force's Southeast Air Defense Sector at Tyndall AFB, Fla., scrambled F-4s from the Michigan Air National Guard Detachment at Seymour Johnson AFB, N.C., which arrived about the time the F/A-18s were leaving. The F-4s couldn't cruise slow enough to stay with Root's Cessna. An A-6 *Intruder* from Cherry Point had been providing escort. The A-6 stayed with the Cessna for about an hour and 15 minutes. Fortunately, someone on the ground had the foresight to get a KC-130 tanker up in the air. The Marines at Cherry Point assembled a duty crew to fly the KC-130 for refueling and to possibly act as mission commander.

Meantime, FACSFac was clearing aircraft out of the range. There was a VAW-121 E-2C with a pilot, copilot and a backend operator in flight, giving three Naval Academy cadets a familiarization flight. Coincidentally, there was also a VAW-120 E-2C with students aboard for air intercept training.

Responding to a request from FACSFac, the VAW-120 E-2 became on-station mission commander, operating at 20,000 feet. Everything else was going on at 10,000 feet. It stayed about 90-100 miles away from the Cessna and never saw it except on radar. The East Coast of the U.S. goes off to the southwest so the Cessna and its escorts were getting further and further out to sea. As they proceeded further south over the ocean, they went out of radio and radar contact with shore sites. The VAW-121 E-2 immediately assumed mission relay, placing itself between the Cessna and the coast. Keeping an

## Combined Excellence

The following edited account by Mike O'Rourke, Air Safety Investigator, National Transportation Safety Board, describes the six-hour flight and subsequent crash on July 13, 1989, of Washington lawyer Thomas Roots' Cessna 210. It's a record of outstanding multiservice teamwork by the military aviators and the flight crews who answered the distress call of a fellow pilot.

By JO2 Milinda D. Jensen

O'Rourke: From the flight tapes there were no problems. The Cessna 210 *Centurion* departed on a normal routine flight at 6:26 a.m. from Washington National Airport. The pilot received radar vectors to Flatrock and Lawrenceville, Va., with an estimated landing time of 8:03 a.m. at Rocky Mount, N.C. He climbed out normally to 10,000 feet, his assigned cruising altitude. At 7:50 a.m. the Cessna pilot (Root), notified Leesburg, Va., air traffic controllers that he was having trouble breathing. That was his last transmission. Washington controllers began clearing the airspace ahead and searching for air assistance.

Two Army aviators, First Lieutenant Brian Alexander and CWO4 Merville Olive, were on a routine flight from Fort Bragg, N.C., to Davison Army Airfield, Va., when their assistance was requested. Changing course, the C-12 pilots quickly located the distressed aircraft and began flying "wingtip to wingtip." Both aviators were able to see the unconscious Root.

"He was obviously unconscious. His head was angled back and his mike was pushed away from his mouth," Alexander said.

The pilots knew the aircraft was on automatic pilot because of its steady southern course and established altitude of 9,800 feet.

After about an hour of accompanying the Cessna, the Army plane ran low on fuel. Meanwhile, Washington controllers were talking with the Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFac VaCapes), Va.

"Giant Killer" is the way that most aviators refer to FACSFac VaCapes. The facility earned its call sign because of the giant mission the staff performs on a daily basis. It is here that a handful of officers and enlisted personnel watch teams convert the air, surface and subsurface training requirements for the fleet into a schedule. In real time, they monitor and control the safe execution of that schedule. Their realm of responsibility covers 94,000 square miles, stretching from just south of Nantucket Island off Massachusetts to Charleston, S.C., and extending from the three-mile limit eastward for 200 miles.

About that time the aircraft went into offshore warning areas. It was then that the control of the operation was

open communication link required transmissions by the E-2, repeating to FACSFac VaCapes on another frequency, who would then advise the appropriate center. This also helped to keep an accurate record of the entire event.

*"During the emergency I was the supervisor trainee. I called a company to find out the fuel capacity and endurance capability for the Cessna 210. I also conducted other coordination between controllers and adjacent facilities," said AC3 Christian McKeithen, FACSFac VaCapes.*



**The A-6 was close enough for its crew to see the unconscious pilot and try to awaken him by constant radio communications.**

There were other aircraft operating in the area, assigned hard altitudes. The key to this whole thing was the on-scene commander, VAW-120 E-2C call sign "Grey Hawk," coordinating the mission by passing information to the relay aircraft, who in turn relayed to FACSFac VaCapes, then to Washington Center, Jacksonville Center, and onto Miami Center. They had to protect the area. There could have been a terrible tragedy if a civilian aircraft on a normal flight had wandered through that airspace. The information had to be very timely and very accurate, because you're basing separation of civilian flight from military on this information.

*"By 1015 we were airborne [in a KC-130] headed south toward the distressed aircraft's position. We needed to traverse the W-122 area, so we contacted "Giant Killer," who handed us off to Grey Hawk. The E-2 was controlling a Marine A-6E, an Air Force C-130, a Coast Guard C-130, and talking to two Navy S-3s at this time," recalled Captain Kurt Jackson, VMGR-252, MCAS Cherry Point.*

While all this was going on, a first class petty officer at FACSFac VaCapes called Coast Guard Air Station (CGAS), Elizabeth City, N.C., to get assistance from search and rescue (SAR) experts. So now there's a Coast Guard C-130 catching up to everybody heading south. Meanwhile, still up at 20,000 feet is the on-scene commander keeping other aircraft out. Everyone involved in the operation spoke very highly of Grey Hawk's keeping call signs straight and providing communications, command and control.

By this time the whole scenario had transferred out of FACSFac VaCapes' control to FACSFac Jacksonville, Fla. The Marine A-6, already low on fuel, had to get home; as it was breaking off, FACSFac JAX came up with an S-3 Viking on a pilot training flight at Jacksonville. It had the executive officer and a student onboard. They had a full load of fuel and said they would come in.

*"During this time our crew was monitoring the efforts of all the aircraft directly on the scene by radio and radar. After one hour, the A-6 that was flying wing of the disabled aircraft had to return to the base due to low fuel. On its way back to Cherry Point, we rendezvoused. They received 5,000 pounds of fuel from us," stated Staff Sergeant William Scully, VMGR-252, MCAS Cherry Point.*

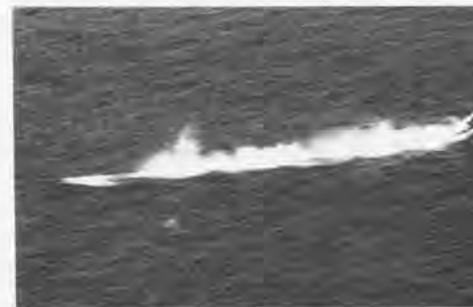
The KC-130 tanker remained on the scene in case anyone else needed fuel. The S-3 stayed until a Coast Guard HU-25 Guardian out of Miami arrived. Meanwhile, Grey Hawk remained on-scene commander. About this time Air Force Aerospace Rescue and Recovery Service launched an HC-130 from Homestead AFB, Fla., which joined the other aircraft.

Grey Hawk was getting low on fuel as the time approached noon. So now going southbound were a Coast Guard C-130 and an HU-25, a USAF HC-130 and a P-3 doing communications relay. The Coast Guard, which operates HH-3F rescue helicopters from CGAS Clearwater, Fla., Detachment Nassau, Bahamas, was contacted. Manned by three Coast Guard personnel and one Air Force exchange pilot, one of its H-3s – maintained on alert during the summer months to support search and rescue

for the Bahamas – took off. Ironically, these pilots were following the incident on a local news channel when the embassy called and ordered them airborne.

*"The Cessna first lost airspeed about the last 10 minutes of flight down to around 110 knots indicated (I can remember having a little difficulty staying behind the aircraft). Then it lost about 2,000 feet of altitude, made a coordinated turn to the left and continued to lose altitude as the Cessna made several spirals, some of which were close to 90-degree banks. The Cessna 210 seemed to level out a bit before ditching. The tail impacted first, then the left wing, resulting in an immediate 90-degree left turn, and settled into the water up to the wings. It took a little over two minutes for the aircraft to sink. No emergency locator transmitter was heard," explained AD1 Gene Lupton, Jr., Coast Guard C-130 flight engineer.*

When the Cessna impacted the water, the Air Force HC-130 dropped its parajumpers. The copilot on the Coast Guard H-3 said he had to come up and circle once to get out of the way of the C-130 while it was dropping a raft. From there they went right in and picked up the pilot of the ill-fated Cessna Centurion.



**Root's Cessna immediately after impact in the Atlantic.**

*Lieutenant S. G. Riley III, FACSFac VaCapes, summed up: "By establishing a sequence of on-station reliefs for chase aircraft and communications aircraft, we were able to keep a constant plot and communications link going... The teamwork, flexibility and cooperation of the FAA, Navy, Army, Marine Corps, Coast Guard and Air Force were tested today. Result: a life saved." ■*

## Airscoop Pix

Left, the Sikorsky HH-60H has as its primary missions strike rescue and special warfare support, with secondary missions of logistics and medevac. A derivative of the SH-60F CV helo, it is the first aircraft designed specifically for the Naval Air Reserve.

Sikorsky Aircraft

Below, an F-14A, photographed over the Naval Air Test Center, Patuxent River, Md., completes a captive carry flight with four MK 83 general purpose inert bombs. The testing is aimed at giving the Tomcat an air-to-ground capability against various targets, using MK 80-series bombs, as well providing release of air-launched decoys. The F-14A and F-14A Plus are involved in the test program.



Left, on September 14, the V-22 Osprey tilt-rotor aircraft achieved full in-flight conversion from helicopter mode to airplane mode. The conversion is accomplished by rotating the engine nacelles and propellers from 90 degrees (vertical) through zero degrees (horizontal). During this tilting of the 38-foot-diameter propellers, the airplane's forward-swept wings progressively generate more lift, and the propellers function increasingly like propellers and less like helicopter rotors.

Bell Boeing





## Association of Naval Aviation Bimonthly Photo Competition

Marine Capt. Richard Mullen, HMH-464, MCAS New River, N.C., won the fifth bimonthly Association of Naval Aviation Photo Contest with his shot of an AV-8B *Harrier* in Norway, opposite page, top. Two other photos by Mullen received honorable mention: above, a section of *Super Stallions* landing in Norway and, left, a CH-53E nestled on a mountain top.



Below, the new Sikorsky HH-60J Jayhawk medium-range recovery helicopter flies over two Coast Guard vessels in Long Island Sound. The aircraft has the ability to fly a 300-nm radius from its base and recover six people with 45 minutes of on-scene search and rescue time. The first of 24 Jayhawks will be delivered in March 1990 to the Coast Guard, which plans to order at least 32.

PHC Chet King, Fleet Imaging Command, Pacific, won honorable mention in the fifth bimonthly Association of Naval Aviation Photo Contest with his photograph of the bow catapult officer aboard Enterprise shielding himself as aircraft are launched.



Sikorsky Aircraft

## Naval Aviation Engineering Service Unit

# Service is Their Business

By JO2 Milinda D. Jensen

**I**t's a big job but the Naval Aviation Engineering Service Unit (NAESU) has supported most of the fleet's aircraft systems since 1942. This monumental task involves supplying field engineering, instruction and assistance to Navy and Marine Aviation activities in the installation, maintenance, repair and operation of all types of aviation systems and equipment. NAESU has teams of federal civilian employees and Navy chiefs called Navy Engineering Technical Specialists deployed worldwide. Additionally, Contractor Engineering Technical Services personnel supplement this organic capability.

A field activity of the Naval Air Systems Command, NAESU is headquartered in Philadelphia, Pa. Originally called the Airborne Coordinating Group, the unit was established in WW II to relieve the critical shortage of trained avionics technicians caused by the advancing technology of the electronics age.

"Years ago each squadron had a cadre of NAESU technicians, each specializing in one area," said Commander Gary Ikuma, NAESU's commanding officer. "With cutbacks in our funding, we must require that our techs take on more tasks and support multiple customers. They have to be experts on more equipment," he added.

"We trust our people to do their jobs to the best of their abilities. Because our personnel are so spread out, they must have the ability to work independently," Cdr. Ikuma commented. "We have Navy and Marine officers, senior noncommissioned officers, chief petty officers and senior civilians serving as officers in charge [OICs] or directors of our detachments." Technical representatives are assigned to over 42 detachments throughout the fleet and reserves.

Their specialized expertise is a plus. "The aviation maintenance backgrounds of our OICs and directors, coupled with their years of leadership experience, make them exceptionally well qualified to



A NAESU technician from Detachment Willow Grove, Pa., gives additional information to a member of the maintenance crew.

administer our technical assistance and training efforts in the field," Cdr. Ikuma said.

For the young airman coming straight out of an "A" school, having a technical representative available provides the missing piece in the puzzle. "Sometimes we get stumped and the tech reps can help because they have all that field knowledge," said AE1(AW) Bob Kempell, NAESU Detachment, Willow Grove, Pa. "There's a bit of rivalry in squadrons for each individual to know a little more than the next guy," he went on. "Some sailors don't want to give up that knowledge because that means they won't have the edge anymore. NAESU reps aren't considered competition. If a sailor hangs out with a tech rep everyday who has the knowledge in his head, he'll eventually gain the information."

Continuity is also an advantage. Most NAESU tech reps have been with a system for a long time, making them particularly knowledgeable. And most are ex-military personnel so they understand the unique problems of the naval services. "I enjoy working

with the sailors, and I feel good when I see a young person develop into a really good tech," said Robert Benjamin, an electronics technician at NAESU, Det Willow Grove.

The biggest advantage that tech reps provide is on-the-job training (OJT). "We don't compete with the Fleet Readiness Aviation Maintenance Personnel schools or formal schoolhouses. We conduct on-the-job training. That's our focus. We take sailor and Marine apprentices and make them journeyman experts on their equipment. We hone their skills," Cdr. Ikuma emphasized.

"It's hard today to get sailors into a classroom; they don't have much time," commented Bill Robinson, Director, NAESU, Det Willow Grove. "OJT is the best benefit that any young sailor can have. The skilled techs help him apply the basic knowledge he already has."

But the key to maintaining future support to the air community lies with program managers like Tom Ricci, in charge of P-3 support. "I'm responsible for providing adequate coverage in the field. That means placing the right tech in the right location," he said. "Knowing the needs of the fleet and projecting the needs in the out years is the most challenging part," he explained. "This is a great time to be associated with P-3s. The Update IVs are being introduced in the 1992-94 timeframe. After that, the P-7 LRAACA [long-range, air antisubmarine-capable aircraft] will arrive on the scene."

Messages have already been sent out to all NAESU personnel asking for volunteers for the project. It's likely that some techs in the P-3 community will naturally transition into it, but others will be needed.

When there's a need in the Naval Air community for a tech rep, where does one turn? "Simply contact the local NAESU OIC or director and explain the problem," Ricci said. "If the detachment can't take care of the problem, we'll find out who can. We always know or can find out where to go to solve it."

Today, with a work force of over 500 civil service, 87 military and approximately 500 contractors stationed aboard ships and at Navy and Marine Corps installations around the world, NAESU reps will still be the first to claim that no job's too big. After all, service is their business. ■

## PB2Y Coronado

By Hal Andrews

Among the Navy's WW II operational flying boats, the Consolidated PB2Y *Coronado* has always received the least recognition. Produced in smaller numbers than its contemporaries, the PB2Y served with distinction in Pacific combat and Atlantic antisubmarine warfare (ASW) operations, but its unique service was as a major transport and hospital evacuation airplane, using its capacious hold to advantage. Early problems and the advent of long-range, land-based patrol planes led to cutbacks in PB2Y production, and overshadowed the fact that, on a "per airplane in service" basis, *Coronados* ranked among the most versatile and effective WW II naval aircraft.

Like many WW II airplanes, the PB2Y traces its beginnings to the mid-1930s. With production PB2Ys ordered in 1935, BuAer turned to the next step in flying boats. Two experimental, four-engined prototypes were ordered in mid-1936: the Sikorsky XPBS-1 and the Consolidated XPB2Y-1. Similar in overall design, both were high-wing, cantilever monoplanes, with single tails and wing tip floats, a nose and tail manual gun turret and bomb bays in the inboard wings. Both used 1,050-hp Pratt and Whitney R-1830 twin Wasp engines. While Sikorsky's used fixed-wing tip floats, Consolidated's continued the retractable scheme used on the PB1Y.

Rolled out of Consolidated's San Diego, Calif., plant, the XPB2Y-1 first flew in December 1937, experiencing directional stability and control problems. Two auxiliary fins mounted on the horizontal stabilizer failed to cure the problems, and a completely new twin tail assembly was installed, featuring circular planform vertical surfaces on the tips of horizontals mounted with dihedral to a stub fin. The problems solved, the Navy Board of Inspection and Survey (BIS) trials began at NAS San Diego in August 1938. In late October, trials were interrupted for a cross-country round trip to NAS Anacostia, D.C., where the XPB2Y-1 was among the military aircraft inspected by President Franklin D. Roosevelt. The



XPB2Y-1

uniqueness of a large flying boat making nonstop transcontinental flights prompted a great deal of press/newsreel attention. Some damage caused by landing into a large Pacific swell brought the trials to a close in December, after which repairs and changes were completed and the airplane accepted in early 1939. It became a flag plane for the fleet's Aircraft Scouting Force later in the year, and served through the war as a VIP transport.

Consolidated was selected for the production contract, awarded in March 1939, but limited to six airplanes, largely due to the high cost. The production airplanes, PB2Y-2s, were almost a whole new design. They did retain the wing, with four engine nacelles, wing-tip floats, and internal bomb bays for eight 1,000-lb. bombs and provisions for carrying four more, or two torpedoes, on underwing racks. The new hull was much deeper and straight sided; rectangular sections were added to the middle of the vertical fins and rudders, the bow turret was a new ball type, and a dorsal blister was mounted just aft of the wing, resulting in a very different appearance. The six gun positions of the XPB2Y-1, including the tunnel gun, were retained, each now equipped with one .50 gun. New R-1830 engines were capable of 1,200 hp and were two-stage supercharged for increased performance at altitude. The added power hardly compensated for the considerably increased weight.

Following initial flight tests, VP-13 received its first in December 1940, and BIS trials began at San Diego in January 1941. Trials were completed in May except for rough water tests to be completed later. By summer, five PB2Y-2s had been delivered to

VP-13, the initial ones resplendent in the colorful paint scheme and markings of the thirties, while all soon appeared in camouflage. The sixth was being converted to prototype the changes planned for 200 PB2Y-3s, ordered in November 1940. While only a handful existed, VP-13's PB2Y-2s played a major role in early U.S. WW II Pacific activities. Stripped of much of their military equipment, VP-13 operated them as high-priority transports from the West Coast to Hawaii and on across the southern route to Australia until the newly formed Naval Air Transport Service (NATS) took over — presaging the PB2Y's major role with NATS. By this time, with the naming of U.S. military aircraft, the PB2Y had become the *Coronado*.

The PB2Y-3s featured increased armament, armor and fuel tank protection. No increase in engine power accompanied the changes and the mission performance of the *Coronado* suffered accordingly. The XPB2Y-3 flew late in 1941 and was delivered soon after Pearl Harbor. Production of -3s was in its early stages by this time, with changes arising from trial results and wartime requirements being incorporated. The first production airplane was delivered in June, by which time the XPB2Y-3 had been consigned to conversion to the XPB2Y-4 with four 1,600-hp Wright R-2600s. Of 626 *Coronados* on order by this time, 54 would be -4s with the increased power restoring the desired performance. Two hundred were ordered under lend lease, with 50 specifically for Britain's RAF.

Following initial delivery of a production -3 in June, accelerated service trials began. By September, it was evident that a good many problems required correction, including leaking integral wing fuel



PB2Y-3R

tanks and inadequate range with self-sealing tanks. With production accelerating, and a need for transports, 29 of the first 60 airplanes off the line would be stripped as transports, others used for training and VP-13 receiving 12 as the first combat squadron. One would join the XPB2Y-1 as a flag transport.

At the end of the year, VP-13 deployed to Hawaii for operations. The service test problems followed, the leaking tanks causing grounding of the *Coronados*. While operations, both in the fleet and as transports, demonstrated the PB2Y's capabilities, the continuing problems gave the airplane a negative image in fleet commands. In spite of the problems, major accidents were rare compared to many military types during the rapid build-up of training and operations.

In the spring of 1943, Pacific Fleet interest in large land-based patrol aircraft, along with changing British requirements, resulted in cutbacks of PB2Y-3 production to a total of 210 airplanes, with 98 to NATS and 35 for the British. By this time, three of the four planned patrol squadrons were flying *Coronados*, VP-15 being the first of two planned AirLant squadrons. Along with two NATS squadrons, both Pan American and American Export Airlines were operating the early transports – initially designated as JRY-1s in early 1943 but redesignated as PB2Y-3Rs in the summer.

Late summer brought the PB2Y problems to a head. VP-15 had deployed to Bermuda for ASW operations and was recalled to New York due to fuel tank leakage, and production acceptance of the remaining PB2Ys stopped. Major attention was focused on a solution to the wing tank leakage problem. Different solutions applied to different blocks of airplanes. Some got synthetic rubber cells installed in their tanks, others new sealing compounds. Combat airplanes got self-sealing fuel cells. Fuel tanks in the hull made up for lost fuel volume. Rework was done by both Consolidated-Vultee and Rohr Aircraft. For the transports, single stage R-1820-92 engines were installed since higher altitude capability was not required and the weight saved allowed increased payloads.

By the end of 1944 the fix programs were well under way. The last 41 *Coronados* off the production line were

moved directly to Rohr where they would be completed and delivered as transports. To offset the increased weight of armament, armor and electronics in the combat PB2Y-3s, the engines were also changed to single stage -92s. Some airplanes were converted to hospital evacuation and rescue configuration and others as flagships, both with combat equipment stripped. The -92 engined airplanes were redesignated as PB2Y-5s, with transports -5Rs, evacuation rescue 5Hs, and flagships -5Fs. As the reworked airplanes went into service, the *Coronados* finally proved their worth, both in combat and as transports. The British, having used 10 *Coronados* delivered to them as transports, returned the other 25 which went through the mod program and into Navy service.

Meanwhile, the R-2600 powered XPB2Y-4 had demonstrated the *Coronado's* potential with increased power. Another PB2Y-3 was converted to the XPB2Y-6 with the PB4Y-2's R-1830-94 engine installation. While also showing improved performance, the benefits were not sufficient to warrant a new conversion program.

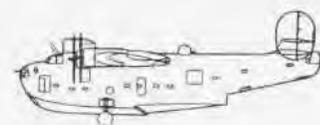
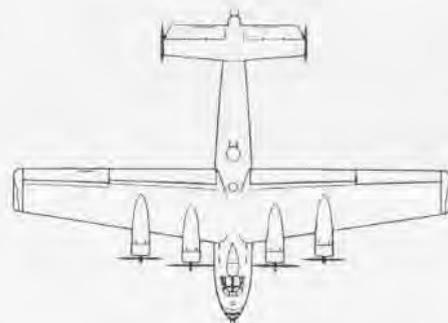
The combat -5s with VP-13 and VP-102 in the Pacific had an outstanding combat record, including extended range bombing missions and a recorded tally of 11 enemy aircraft shot down. The evacuation -5Hs brought out many wounded from the Pacific island battles, and the transports fed the needs of the U.S. forces as they reconquered territory lost to the Japanese. Jet assisted takeoff was regularly used to get heavier loads off the water.

As land-based R5D transports became available in early 1945, NATS' PB2Y requirements were cut back, and early transport airplanes were salvaged for spares. With times like 4,000 hours in their logs, they had more than shouldered their share of the load in spite of the initial problems. Two PB2Y-5Hs were assigned for Coast Guard search and rescue operations, as the modification program approached completion after V-E Day. Following V-J Day, the PB2Ys were retired rapidly and scrapped, the last by the end of summer 1946. Only two surplus *Coronados* remained in existence, one of which is now in the National Naval Aviation Museum at Pensacola, Fla. ■

PB2Y



	XPB2Y-1	PB2Y-5
Span	115'	115'
Length	79'3"	79'3"
Height	27'5"	27'6"
Engines	(4) P&W R-1830-72	(4) P&W R-1830-92
	1,050 hp T.O.	1,200 hp T.O.
Max speed	230 mph	211 mph
Service ceiling	22,000'	13,100'
Range	4,390 mi	2,570 mi
Crew	8	9
Armament		
flexible guns:	bow .50 tail .50 waist (2) .30 or .50 tunnel .30 or .50	bow (2) .50 tail (2) .50 waist (2) .50 top (2) .50
bombs:	up to 12 1,000-lb. or	up to 12 1,600-lb. or
torpedoes:	Two MK 13	Two MK 13





Pearl Harbor, December 7, 1941.

Ready to Mobilize – Part 2 of 2

# Victory Winning Team

By Capt. Steven U. Ramsdell

**B**y 10 a.m. on December 7, 1941, the battle line of the United States Fleet lay shattered under the towering clouds of black smoke rising above Pearl Harbor. With six battleships sunk or sinking and two others damaged, the big-gun power of the American Navy had been destroyed by the Japanese in two hours. Yet, the Pacific Fleet began offensive strikes against Japanese territory less than

two months later. Within six months the heart of Japan's carrier force was on the bottom of the Pacific Ocean, and within a year its Pacific offensive was permanently stopped in the Solomons. Naval Aviation was the critical constant in that remarkable history.

Although unprepared for war in every category when war broke out in Europe more than two years before Pearl Harbor, Naval Aviation had built

a respectable foundation for mobilization by 1939. Much of the equipment and many of the programs which made mobilization possible were in place, on the way or on the drawing board, but the full effects of mobilization were still far in the future in December 1941. However, a much more important development had occurred, the integration of Naval Aviation into the Navy and Marine

Corps. That development was the key to the Navy's offensive punch after established tactical concepts were rendered obsolete at Pearl Harbor; it provided the air-ground teamwork which made the Marines unbeatable across the Pacific, and it allowed the aviators to concentrate their energy on fighting the Japanese and Germans from the moment the war began.

While many details of the relationship between aviation and the rest of the Navy and Marine Corps remained to be worked out when the war began, the integration was permanent. Instructively, the United States Fleet was under the command of a Naval Aviator, the Pacific theater was commanded by a submariner, and the Pacific Fleet was alternately commanded by an aviator and a surface warfare officer. Marines in the field were directed with distinction by both aviators and ground officers.

The most important single event in the integration of aviation into the Navy was the establishment of the Bureau of Aeronautics (BuAer) in July 1921. In a single stroke, aviation acquired institutional parity with the rest of the Navy. At that time almost all of the real power and authority in the Navy, except for command of the fleet itself, was vested in semi-autonomous bureaus. Before BuAer was created, Naval Aviation was only loosely coordinated by the Director of Naval Aviation – under the Chief of Naval Operations – who had little power. After July 1921, the Navy's aviation program was centrally directed by an organization with real clout. Naval Aviation's steadily increasing share of the Navy's budget during the 1920s, a period of exceptional austerity, demonstrated the significance of the change.

BuAer played the vital role of steering the Navy through the tangle of the technical and nontechnical innovations required to successfully adapt airplanes for combat at sea and develop the know-how to use them. As one senior officer described the dilemma of aircraft carrier development in 1920, "You won't be able to get a plane until you get a ship, and we cannot design a ship without the plane." Most of the other problems associated with creating seaworthy aviation were no less thorny. But before BuAer was formed,

responsibility for the design and manufacture of airframes rested with the Bureau of Construction and Repair; engine design and procurement were handled by the Bureau of Engineering; the Bureau of Ordnance controlled aircraft weapons; and so on. That system proved to be satisfactory for ships, but it was unsuited to aircraft.

BuAer brought a sense of order to this confusion and made aviation work in the Navy. Remarkable achievements were made over the next two decades. Aircraft were developed for specialized missions, and the missions were more sharply defined. Radial air-cooled engines, self-sealing fuel tanks, protective armor, radios and navigational aids were introduced which made aircraft far more effective. The development and refinement of catapults and arresting gear made their operation from ships practical. And, despite the 1920 dilemma, aircraft carriers were developed and given the power which revolutionized naval warfare.

BuAer had more than material responsibilities. Under its charter, its chief could make recommendations to the Chief of the Bureau of Navigation regarding the selection, assignment, training, qualification and promotion of aviation personnel. The aggressive discharge of this prerogative by the bureau's first chief, William A. Moffett, made BuAer a dynamic force in the development of a professional aviation community within the Navy.

Perhaps most importantly for the integration of aviation into the Navy, BuAer's establishment was an expression of the importance the Navy placed on aviation. As such it was the alternative to a separate air corps – either within the Department of the Navy similar to the Marine Corps or in a separate Department of Aeronautics, a concept which gained widespread support after WW I. While the issue of a separate air corps did not die in 1921, the creation of this powerful institution forestalled such a movement from gaining momentum by placing aviation on an equal footing with older centers of power in the Navy and eliminating the one serious rationale for its existence: organizational neglect. Interest in a separate aviation corps among Naval Aviators was never a passion based

on theoretical and tactical grounds – the conviction that aircraft had to be commanded and operated independently to be effective – as it was in the Army.

Many factors contributed to the success of the Bureau of Aeronautics but none was as important as the careful direction it received from Rear Admiral William A. Moffett. As BuAer made aviation work, Moffett made BuAer work.

He was appointed the Director of Naval Aviation from command of the battleship *Mississippi* while the legislation creating BuAer was passing through Congress and became the new bureau's first chief. As a Medal of Honor winner he was widely respected when he arrived, and he quickly gained the trust and loyalty of the young aviators with whom he surrounded himself: men like John Towers, Kenneth Whiting, Henry Mustin and B. G. Leighton. Among the many reasons for his success was his ability to tap the enthusiasm, energy and expertise of these officers. They were given the freedom to pursue the details of the bureau's work while Moffett concerned himself with the broader issues of the bureau's administration and authority. His vigorous promotion of aviation interests provided a significant check to the separate corps agitation which was occasionally visible among his subordinates.

Moffett was a consummate operator in the bureaucratic and political campaigns required to win and advance the status of Naval Aviation. He was a master of persuasion and a skillful publicist. He cultivated influential friends in business and industry and successfully enlisted powerful allies within the Navy, Congress and the private sector to secure aviation's position within the Navy and to maintain his BuAer position.

Moffett's position was enhanced by the Budget and Accounting Act of 1921 which created the requirement for a Presidential budget, the Office of Management and Budget, and the budget committees within both houses of Congress. By making the budget process far more complex than it had been before, the act placed a premium on precisely the skills Moffett had in abundance. A gag rule imposed by

## Naval Aviation in WW II



RAdm. W. A. Moffett (right) with Cdr. J. M. Reeves (far left) aboard Langley circa 1924-25.

President Harding required Executive Department officials testifying before Congress, including the representatives of the Navy, to support the President's budget, and had the effect of increasing the value of Moffett's political acumen. BuAer's successful competition for Navy appropriations during Moffett's tenure was attributable to his resourcefulness in high-stakes politics.

The qualities and skills which served Moffett and Naval Aviation so well within the Navy also served well in his defense against assaults on Naval Aviation from outside the Navy, most notably those led by Billy Mitchell.

Brigadier General Billy Mitchell, who commanded the Army's air forces in Europe during WW I, played several important, though unintended, roles in the integration of aviation into the Navy. Returning from Europe in 1919, he embarked on an increasingly sensational crusade for a unified and autonomous air force which would include Naval Aviation. This proved to be a catalyst in the process leading to BuAer's formation. A 1919 reorganization had actually reduced the power of the Director of Naval Aviation. But alarmed by the prospects of Mitchell's proposal and the

receptivity it received from some members of Congress, the Navy moved to strengthen the position of aviation within its organization. By 1921 the establishment of a new bureau for aviation had broad support within the service. Without Mitchell's crusade, the Navy was unlikely to have reversed its position so fast and so completely.

The friction between Mitchell and Naval Aviation reached a climax in September 1925 when he charged that the crash of the Navy's airship *Shenandoah* was caused by "incompetency, criminal negligence and almost treasonable administration of the national defense by the war and navy departments." That intemperance led to the end of his Army career, but more importantly for Naval Aviation and its integration into the Navy, it led President Coolidge to appoint a board headed by Dwight Morrow to examine military aviation in the United States.

The most influential of some fifteen separate official boards and committees which addressed the subject of military aviation between 1919 and 1935, the Morrow Board came down solidly on the side of Naval Aviation and the program Moffett was pursuing. It recommended against a separate air force and supported a five-year, thousand-plane program for the Navy. It concluded that Assistant Secretaries for Aeronautics should be added to both the War and Navy Departments. The board's prestige was such that these measures passed Congress in the next session and became law.

Another contribution of Mitchell to the integration of Naval Aviation involved his action to exclude nonaviators from its leadership. Through supporters in Congress, he succeeded in requiring the Chief of BuAer to be an aviator. Intended to disqualify Moffett, that requirement led instead to the creation of the Naval Aviation Observer program through which Moffett promptly got his wings. A less direct influence was the Morrow Board's recommendation to require the commanding officers of aviation ships — carriers and tenders — to be qualified aviators. After that proposal became law, senior officers like William Halsey and Ernest King chose to go through flight school to become

Naval Aviators. Thus, measures intended to ensure that aviators controlled Naval Aviation were implemented by the Navy to make certain that the leadership of Naval Aviation remained firmly in the hands of orthodox line officers. Mitchell succeeded only in driving the Navy's aviators and nonaviators closer together.

The integration of aviation into the Navy was also a beneficiary of the Washington Treaty of 1922 limiting naval armaments. First, it brought to a halt the massive capital shipbuilding program of 1916. This did not produce a windfall in funding for Naval Aviation, as Moffett hoped it might, but it did eliminate a major competitor for the Navy's limited dollars. Second, because the treaty allowed two battle cruisers then under construction to be completed as aircraft carriers, the Navy's first two fleet carriers — *Lexington* and *Saratoga* — were first-class, large-decked warships, and their size and performance helped resolve the debate regarding carrier size. The next carrier constructed, *Ranger*, conformed to the small carrier school of thought. But even before she was commissioned, the two ex-battle cruisers had conclusively demonstrated the advantages of larger ships and the aircraft carrier's true significance to the fleet.

In the years after Moffett's death, his successors continued the energetic leadership of BuAer, but the institutional position of Naval Aviation within the Navy was largely secure by the time of his death in 1933. The work of integrating aviation into the fleet, however, which had been under way since Naval Aviation's beginning, continued and gained momentum during the remaining years before the beginning of the war.

By the early 1920s, battleship sailors recognized that effective use of their long-range guns would likely depend on the information available from airborne spotters. Equally clear was the value of denying that same kind of intelligence to an opposing battle line. Gunfire spotting, therefore, provided one of the early rationales for aircraft carriers.

Flying boats and planes burdened with floats could not hope to out maneuver landplanes. If landplanes could be flown over the battle line, they could clear the sky of enemy spotters and ensure spotting for

friendly hits; and carriers appeared to be the only way to operate landplanes at sea.

The usefulness of aircraft scouting for enemy ships and submarines was one of the first reasons the Navy was attracted to aviation. The offensive potential of airplanes at sea was also recognized by many visionaries. Indeed, the bombing of the German battleship *Ostfriesland* and the other ships off the Virginia Capes in 1921, over which Mitchell made so much trouble, was intended by the Navy to learn about the effects of bombs on ships – not to determine if bombs could sink them. And Whiting, Mustin and others argued from the beginning that carriers had to be fast to take advantage of their offensive potential.

By 1924 dive-bombing had become a regular routine for the Navy, and by the mid-1930s, the near-vertical dive-bombing techniques which proved devastating during WW II had been perfected. The steep dive not only provided the accuracy required to hit moving ships but minimized the risk to the attacking plane as well. Marines used the same techniques to achieve the precision required for the close support of ground troops by aircraft. During this period, the tactics for airborne torpedo attacks were also worked out.

Aircraft had participated in the annual fleet exercises since before

WW I. These were the crucibles from which the doctrine integrating aviation into the fleet emerged. *Langley*, the Navy's first carrier, participated successfully in her initial Fleet Problem in 1925, but her operations were largely experimental in nature until she felt the hand of Rear Admiral Joseph M. Reeves. Fresh from the Naval War College and the influence of Moffett's ally, Admiral W. S. Sims, he was convinced that carriers were the answer to the Navy's deficiency in battleships, but they needed to carry more aircraft to deliver on that promise. By the summer of 1926, he had increased the number of planes on *Langley* from 8 to 42. He slashed the ship's takeoff and landing intervals, which shortly fell to 30 seconds, and set her focus squarely on tactical employment rather than material development. In short, Reeves made carrier aviation work in the fleet.

*Saratoga* and *Lexington* debuted in the Fleet Problem for 1929. Admiral W. V. Pratt, acting on a proposal by Reeves, sent *Saratoga* and a single escort on an electrifying sweep around the defenders to launch a successful attack against the Panama Canal. Over the years these exercises became increasingly inventive. Surprise attacks were launched against Pearl Harbor by *Langley* in 1928 and again in 1938 by *Saratoga*, which concealed her approach to the islands behind an advancing weather front.

Fleet Problem XX in February 1939 illustrates the degree to which air power had become an integral part of fleet operations before WW II began. The majority of Naval Aviation deployed to the Caribbean to participate, including the new carriers *Yorktown* and *Enterprise*. Of five CVs only *Saratoga*, undergoing an overhaul, was absent. Three of the five patrol wings, plus supporting tenders, were involved; and Aircraft One, the Marine Corp's east coast air group, deployed en masse to San Juan, P.R., and St. Thomas, V.I., to participate.

Much of the problem's activity involved or centered on aviation. The search for the enemy carriers and their earliest destruction were the highest priorities for both the defending and

**Before the war, Navy pilots perfected the dive-bombing tactics used to devastating effect by SBDs at Coral Sea and Midway.**

attacking fleets. The exceptional value of the intelligence provided by patrol aircraft was reinforced. Carriers, with their own escorts, routinely operated independently of the battle line. And the offensive punch of carrier dive-bombers was demonstrated again.

Yet, several important lessons remained to be learned. Multiple-carrier operations were rare. Each carrier-escort group operated alone. Carrier task groups and task forces, which later led the Central Pacific campaign, were innovations which did not appear until the middle of 1943. Almost all of the carrier flying was done during daylight; little effort had been made to develop effective night-carrier tactics. Fleet Problem XX, like those before it, also demonstrated the absence of an effective air defense doctrine. While bombing attacks against ships by patrol planes were often judged failures, the carrier-based dive-bombing attacks were rarely resisted with success. That capability awaited the development of radar and combat information centers during the war.

A fully effective doctrine for the incorporation of air power into operations came only under the pressure of combat. However, aviation had become a truly indispensable component of the fleet by 1939. Thanks to the masterful touch of William A. Moffett, Naval Aviation endured the turbulence in military aviation and the financially lean years after WW I to become an inseparable part of the Navy. The product of his labors was the organization which played an ever more aggressive role in the fleet's operations during the 1930s. Carriers and their airplanes did not replace battleships and their big guns in the Navy's view of war. But an integrated fleet had been forged which enabled the Navy and Marine Corps to respond to the shock of Pearl Harbor with offensive operations almost immediately and to throw the full weight of their energy into battle as a victory winning team. ■

#### 50 Years Ago – WW II

December 20: A contract was issued to Consolidated for 200 PBV-1 type aircraft to support an increase in patrol plane squadrons growing out of Neutrality Patrol requirements. This was the largest single order for naval aircraft since the end of WW I.



**Anniversary**

**Naval Aviation Depot**, North Island, San Diego, Calif., celebrated 70 years of service on July 15, 1989. Established in 1919, it was known as the Assembly and Repair Department of the air station. In 1948, it was renamed the Overhaul and Repair Department and, in 1967, it became a separate command called the Naval Air Rework Facility. It was redesignated in 1987 to reflect the more modern and varied tasks and demands of its current mission.



The hangar (top of photo, center) under construction in 1919 at the then-Assembly and Repair Dept. of the air station.

Six foreign military officers, from the Royal Australian Air Force, Spanish Air Force and Canadian Armed Forces, are currently on exchange duty with the depot. These international partnerships offer a win-win situation for everyone and illustrate cooperation and teamwork in action.



RAAF Liaison Officer John Longrigg (left) and RAAF Squadron Leader Stan Pasturczak enjoy NADep's good neighbor policy of friendly exchange.

**Records**

**Cdr. John T. Meister** of VA-75 received an A-6 3,000-hour plaque from Grumman Aerospace Corp. The honor highlights Cdr. Meister's induction into the group of Naval Aviators who have passed this milestone in the A-6 *Intruder*.

**Capt. Joe Parker** completed his 1,000th trap on July 11, 1989, during a carqual detachment onboard *Independence* (CV-62). Capt. Parker, C.O. of the West Coast F/A-18 fleet readiness squadron VFA-125, has accumulated over 5,400 flight hours — including 3,150 in the A-7 and 250 in the *Hornet*.

Several units marked **safe flying time**:

- VP-26, 213,730 hours and 27 years
- VP-16, 169,000 hours and 24 years
- HC-3, 103,000 hours and 15 years
- VS-31, 76,000 hours and 19 years
- VT-7, 50,000 hours and 2 years
- HSL-42, 25,000 hours and 3 years
- VA-55, 20,000 hours and 5 years
- HC-2, 10,000 hours
- VFMA-122, 10,000 hours and 2 years
- HSL-46, 4,500 hours and 1 year
- HS-7, 4,000 hours and 1 year.

**Capt. John Manning**, ComCVW-8, completed his 1,000th arrested landing aboard *Theodore Roosevelt* (CVN-71) on June 10, 1989.

**Rescue**

The *Barbel* (SS-580) was transitioning south of Kyushu, Japan. Three crewmen were on the bridge when three large waves swept over the submarine, washing the bridge team overboard and causing the submarine to take on water, temporarily submerging. **VP-47**, detached to Kadena, Okinawa, provided the first aircraft with a ready alert launch. Initially hampered by floating debris in the area, the crew continued to search for the missing

Scott James



PHAN AUBI

Cdr. Chet Zeller, C.O. of VP-22's "Blue Geese," congratulates AMCS Douglass C. Gillet on his consecutive 22 years in the same operational squadron.

men. Crewmen spotted a survivor and *Barbel* rescued Lt. Charles R. Davenport who suffered only bruises and mild hypothermia. The search continued for two and one-half days but no other victims were found.

**Kudos**

The *Nightdippers* of **HS-5** received the Commander Helicopter Antisubmarine Wing One Sikorsky Maintenance Trophy for establishing new standards of aircraft maintenance and readiness. HS-5 developed and implemented improved engine wash and lubrication techniques and innovative corrosion prevention procedures which have since been incorporated in the aircraft technical manuals.

**VAdm. Clyde E. Robbins**, C.O., Pacific Area, became the 12th recipient of the Coast Guard's Ancient Albatross Award. The award, presented to the Coast Guard aviator on active duty holding the earliest designation "in recognition of a clear defiance of the private realm of the albatross and all its seabird kin while in the pursuit of time-honored Coast Guard duties," was passed on by RAdm. Edward Nelson, Jr., Commander, 17th Coast Guard District.

Air Marshall Sir Barry Duxbury, Air Officer Commanding Number 18 Group, Royal Air Force (RAF), presented the **Coastal Command Trophy to VP-40**, NAS Moffett Field, Calif. The trophy is given by the RAF to the Pacific Fleet patrol squadron displaying the highest airborne antisubmarine warfare proficiency during the preceding year.

The **Admiral Ben Moreell Award** was presented to LCDr. Dennis Fandey of **VXE-6**, Point Mugu, Calif. The annual award, sponsored by the Navy League of America, is for outstanding personal contributions which have advanced the logistics readiness and competence of the naval service.

The aviation winners of the **1989 Secretary of Defense Maintenance Awards** are: Aircraft Intermediate Maintenance Department, NAS Oceana, Va., and Marine All Weather Attack Squadron 332, MCAS Cherry Point, N.C.

**Lieutenant Steven Vahsen** of VP-23 received the 1988 Rear Admiral Thurston H. James Memorial Award which is given annually to the outstanding graduate of the Naval Flight Officer training program. Selection is based on flight proficiency, academic achievement and officer-like qualities exhibited throughout assignment in the Naval Air Training Command. In addition to the award, Lt. Vahsen was invited to join the Naval Order of the United States, the oldest American Naval Society which was founded at historic Faneuil Hall in Boston on July 4, 1890. The order encourages research and writing on naval maritime subjects; preserves documents, portraits and other records of prominent figures; and maintains deeds and memories of our naval history.

**Cdr. John J. Waickwicz**, X.O. of HS-15, received the 1988 American Legion Aviation Valor Award, which is presented annually by the American Legion Aviators Post. It was started by former aviation pioneer and America's leading ace from WW I, Eddie Rickenbacker.

On April 24, 1988, while serving with HS-7 embarked aboard *John F. Kennedy* (CV-67), Waickwicz executed the rescue of 24 survivors from the burning *Bonafish* (SS-82). Waickwicz and his crew spent over two hours in an open-ocean hover and completed the multiple rescues.

The **Golden Eagles** of **VP-9** accepted the first Lockheed/Patrol Wing Ten Safety Squadron of the Year Award for 1988. The squadron was recognized for maintaining safety precautions while meeting all operational commitments.

**Cdr. James Renninger** received an Air Medal for saving an S-3 *Viking* and its crew after the plane's nose gear collapsed during night operations in the eastern Mediterranean. Renninger, C.O. of the VS-24 *Scouts*, was able to get the plane airborne again after the gear gave way in a touch-and-go landing, then brought it in safely to a barricade landing.

One crewman, Lt. Tom Fasanello, punched out from the right front seat as the plane went over the edge of the angled deck on *Theodore Roosevelt* (CVN-71) following the touch and go. Renninger and two crewmen were left in the plane. The pilot managed to get the aircraft airborne and decided against flying to a base in Turkey in favor of a barricade landing.

Renninger made it and, in a curious twist, the nose gear held.

## Honing the Edge

**RAdm. Richard C. Gentz** completed a flight physical and physiology and water survival training through the Aviation Physiology Training Department, Naval Hospital, NAS Patuxent River, Md. Vice Admiral-selectee Gentz relieved Joseph B. Wilkinson, Jr., on September 21, 1989, as Commander, Naval Air Systems Command.



PHAK Carol J. Smith  
RAdm. Gentz, right, fitted with helmet and mask, takes his turn in the high-altitude chamber as part of his physiology training.

What would a squadron like **HMLA-269** do with a six-foot weather balloon? The *Gunrunners* of Jacksonville, N.C., added a twist to their aerial gunnery training by using weather balloons as targets at the BT-11 bombing range, north of MCAS Cherry Point, N.C.

According to Captain R. A. Martinez, HMLA-269 ops officer, the *Gunrunners* took the experiment a "few steps further from a stationary position on the ground to attaching the balloons to remotely controlled boats that will pull them approximately 15 knots to simulate slow-moving aerial targets."

In the future HMLA-269 will incorporate this training into tactical scenarios and also combine it with shadow gunnery, during which an attack helo uses a higher flying helo's shadow as a target.

**HM-18** tested its mine-sweeping capability during exercises in Pensacola, Fla., this year. HM-18 RH-53Ds rehearsed the use of the Moored Mark 103, a mine-detection device towed behind the helo. The long, sled-like device, suspended between two cables, snaps the cables of submerged mines. The mines are then exploded with gunfire from the helo. HM-18 is the first reserve squadron to use the Mark 103.



AD2 Phillip M. Brashear, a selected reservist at HM-18, explains the use of the mine-sweeping device.

Ten reserve air units, 1,450 officer and enlisted personnel and 57 aircraft of CVWR-20 completed two weeks of active duty for training aboard *Dwight D. Eisenhower* (CVN-69), July 22-August 3, 1989, as a show of naval reserve mobilization readiness and mission capability.

Joining the CVWR-20 staff in operation *Brace Warrior '89* were: VFs 201 and 202 from NAS Dallas, Texas; VA-204 from NAS New Orleans, La.;

VA-205 from NAS Atlanta, Ga.; VAW-78 and VAQ-209 from NAS Norfolk, Va.; VAK-208 from NAS Alameda, Calif.; HS-75 from NAS Jacksonville, Fla.; and VS-0174 from NAS Cecil Field, Fla.

Members of **VFAs 305 and 303** prepared to strike, attack and defend targets during an active duty training exercise at the Naval Strike Warfare Center, NAS Fallon, Nev. Six CVWR-30 squadrons operated on a 14-day simulated wartime schedule. The 1,300-man carrier air wing traveled to the desert skies to learn teamwork, coordination and to perfect combat skills.

Cdr. J. P. Hazelrig, ComCVWR-30, said, "Advanced computer technology and an intensive training syllabus devised by the strike warfare center allows the reserve pilots from VFAs 305 and 303, along with the other CAG-30 squadrons, to experience a dose of aerial combat unprecedented in its realism."

A Navy board has selected principals and alternates for **Navy, Air Force and British test pilot training**.  
 U.S. Naval Test Pilot School: principals – LCdr. Dave J. Urlich and Lts. Barry W. Behnfeldt, Mark E. Converse, Brian R. Hastings, John B. Herrington, Owen P. Honors, David L. Prater, Larry A. Pugh, Gary A. Samarija, Steven A. Schellberg, Scott N. Weller and Mark R. Williamson; alternates – LCdrs. Robert J. Gilman and Daniel C. Riggerink; Lts. William J. Dooris, Charles G. Gay, Stephen Gebert, Glen A. Knaust, Paul A. Larocque, William C. McCool and Gerald L. Nyberg. USAF Test Pilot School: principal – Lt. John R. Wood; alternate – Lt. Stephen Gebert. British Empire Test Pilot School: principal – Lt. Steven R. Schrieber; alternate – Lt. Scott N. Weller. U.S. Naval Test Pilot School/Naval Postgraduate School: principals – Lts. Russell J. Bartlett, C. J. Ferguson, Joey A. Miller and John T. Parker.

Scan Pattern



PH3 Robert Noren

As Carl Vinson (CVN-70) rolls out on its final approach, C.O. Capt. Doyle Borchers says, "Battlestar ball, 19 million pounds." "Roger, ball," replies the LSO. A picture-perfect landing!

**Adm. James B. Busey IV, USN(Ret.)**, was sworn in as Administrator of the Federal Aviation Administration by Secretary of Transportation Samuel K. Skinner. Prior to taking the FAA job, Busey served for two years as Commander in Chief, U.S. Naval Forces, Europe, and Commander in Chief, Allied Forces, Southern Europe. A career Naval Aviator, Busey enlisted in the Navy in 1952 and enrolled in the Naval Aviation Cadet Program. He received his commission and Wings of Gold in August 1954.

With **aviator retention** in mind, TraWing-4, NAS Corpus Christi, Texas, held its first Professional Development/Career Day in May 1989. Capt. Steve Wilson, ComTraWing-4, established the event to assist the wing's 200 instructor pilots in career planning and to rekindle their interest in returning to follow-on operational flying assignments.

"This is vital in Naval Aviation where both the cost and complexity of recruiting, training and retaining

currency of our pilots represents a sizeable portion of the taxpayer's investments. That is why retention of skilled, motivated Navy and Marine Corps pilots will always be a top priority," emphasized Capt. Wilson.

The only Marine Corps chief warrant officer at NAS Whiting Field, Fla., was promoted recently to CWO4. A member of HT-18, **CWO4 Jackie L. Grinstead** is the only Marine warrant officer designated a Naval Aviator. He has flown over 7,000 accident-free hours.

## Change of Command

CVW-1: Capt. Robert R. Wittenberg relieved Capt. J. L. Johnson.

FAirWestPac: RAdm. James Best relieved RAdm. Bobby C. Lee.

FitAEWWingPac: RAdm. Phillip S. Anselmo relieved RAdm. James B. Best.

FitActOkinawa/NAF Kadena: Capt. Terry A. Richardson relieved Capt. A. C. Konczyk.

HCS-5: Cdr. Charles Erickson relieved Cdr. David Johnson.

H&HS-37: Maj. Clifford B. Holbrook relieved Maj. Terry D. Metter.

H&HS-38: LCol. Robert D. Erick relieved LCol. John C. Worl.

HMH-466: LCol. Raymond L. Nymeyer relieved LCol. David T. Swan.

HMM-161: LCol. Gary J. Price relieved LCol. Hugh J. O'Neill.

HSL-36: Cdr. Michael J. Brinkac relieved Cdr. J. Ernie Rogers.

HSL-42: Cdr. Larrie G. Cable relieved Cdr. Paul A. Laedlein.

MACS-7: LCol. John R. Garvin relieved LCol. Gilbert H. Davis.

MATCS-38: Maj. Robert J. Bozelli relieved LCol. Edward L. Melton.

MCAS Camp Pendleton: Col. Jon M. Walters relieved Col. Timothy J. Klug.

NAS Bermuda: Capt. Joseph F. Phelan relieved Capt. David B. Bellamy.

NAS Chase Field: Capt. Morris B. Scott relieved Capt. William P. Dobbins.

NAS Fallon: Capt. Rex Rackowitz relieved Capt. Ray Alcorn.

NAS Key West: Capt. John C. Enschede relieved Capt. William J. Denning.

NAS Memphis: Capt. Jerry Baker, Jr. relieved Capt. Richard Grant.

NAS Meridian: Capt. Robert A.

Maier relieved Capt. Kenneth R. Storms.

TraWing-5: Capt. Richard A. Catone relieved Capt. Steven W. McDermaid.

VAQ-136: Cdr. Richard Harley Porritt, Jr., relieved Cdr. Steven V. Westover.

VAQ-137: Cdr. Martin V. Sherrard relieved Cdr. Thomas F. Noonan.

VAW-78: Cdr. Michael Murray relieved Cdr. Daniel Ryan.

VAW-113: Cdr. John B. Gregor relieved Cdr. Christopher J. Remshak.

VF-143: Cdr. Gary M. Jack relieved Cdr. Stephen S. Weatherspoon.

VF-202: Cdr. J. Richard Owens relieved Cdr. Joseph C. Ellis.

VFA-86: Cdr. Ted J. Venable

relieved Cdr. Howard A. Petrea.

VP-5: Cdr. Howard S. Hilley III relieved Cdr. George T. Hodermarsky.

VP-10: Cdr. James A. Carman relieved Cdr. John D. Roberts.

VP-11: Cdr. R. Peter Scott relieved Cdr. Donald K. Miskill, Jr.

VP-48: Cdr. Rory H. Fisher relieved Cdr. Richard P. Fleming.

VQ-3: Cdr. V. C. Lochausen III relieved Cdr. M. A. Davidson.

VS-32: Cdr. Andrew H. Jackson relieved Cdr. James R. Jarrell.

VTC-12: Cdr. Randall E. Bigos relieved Cdr. Frank B. Melson.

VTC-24: Cdr. Danny Dorsey relieved Cdr. Ward Anderson.

VX-5: Capt. Raymond A. Kellett relieved Capt. Eric Vanderpoel II.

## NANews Editor Leaves

If impressions last forever, Commander John Norton's mark on *Naval Aviation News* is carved in granite. When he left on October 6 for his assignment at the Naval War College, Newport, R.I., he left behind a truly saddened staff. Cdr. Norton was not only a good boss but a good friend.

A patrol pilot with a B.A. in English Literature and a master's degree in Public Relations, Cdr. Norton used his inherent eye for design to modernize *NANews*'s "look." His public affairs expertise helped gain visibility for *Naval Aviation News*, and his personable manner established a valuable rapport with the staff's associates. And certainly his creativity helped him as a geographical bachelor who traveled every weekend between Washington, D.C., and Brunswick, Maine. A skilled veteran of Space A travel, he rarely missed finding a flight home.

Capt. Steve Ramsdell, Director, Naval Aviation History and Publication Division, Naval Historical Center, said, "He is the really valuable kind of officer who not only recognizes when something needs to be done but how to get it done. His good ideas are based on a nearly ideal background for this magazine's Editor: patrol aviation, carriers, public affairs. The bottom line was a balanced and imaginative voice for Naval Aviation."

An officer who led by example, he became a self-educated computer expert, which led to the procurement of some very impressive, high-tech



Cdr. Norton gives advice on *NANews* layout.

computer/typesetting equipment for the magazine. It's human nature to resist change, but through his training and good-natured insistence, the staff not only became computer literate but operationally self-sufficient.

During his nearly three years as editor, he befriended all staff members. Assistant Editor JO1 Jim Richeson said, "He truly cares about your well-being as an individual, as a sailor, and as a journalist. If I gave Cdr. Norton a quarter for every important bit of encouragement and wisdom he gave me, maybe he would have enough money to have his [ancient] VW repainted."

The staff's heartfelt best wishes are with Cdr. Norton. We'll miss his good humor, friendship, and that inevitable question: "Where should we go to lunch today?"

Associate Editor Joni Frasher said it best, "I'll miss his retorts and quips but - mostly - him."

By Cdr. Peter Mersky, USNR-R

Chapin, Capt. John C., USMCR (Ret), *A History of Marine Fighter Attack Squadron 115*. History and Museums Division, Headquarters, U.S. Marine Corps, Washington, DC 20374-0580. 1988. 89 pp. Illustrated. \$6.00. Order from Government Printing Office, Washington, DC 20402. Specify No. 008-055-00174-9.

The eighth in the USMC Historical Center's series of squadron histories, this latest volume covers one of the corps' most famous squadrons. VMFA-115 began in WW II and was led by the top Marine ace of that conflict, Maj. Joe Foss. The squadron transitioned to the F9F *Panther* and was one of two Marine Corps jet squadrons in combat during the Korean War. VMFA-115 continued its colorful record throughout Vietnam, becoming one of the last F-4 squadrons in combat by August 1973, flying the last U.S. missions in Southeast Asia in Laos and Cambodia. Today, the squadron flies the F/A-18 *Hornet*.

With such a long period of service, there is much to cover and this monograph offers the format and in-depth treatment now established by this open-ended series. The emphasis is on squadron action and the reader will find accounts of VMFA-115's activities from Okinawa to Pohang and from Taiwan to Da Nang.

These books represent some of the best value for the money in current aviation writing, and there are more volumes in preparation.

Dorr, Robert F. *Douglas A-1 Skyraider*. Motorbooks International, 729 Prospect Ave., Osceola, WI 54020. 1989. 200 pp. Illustrated. \$22.95.

The most recent release in the Osprey/Motorbooks Air Combat series, *Skyraider* details the development and career of the Navy's last piston-engined attack plane. The emphasis is divided between the aircraft and the crews that flew and maintained it. Action in Korea and Southeast Asia is well covered, although the Navy's use of the A-1 in Vietnam is less detailed than the aircraft's service with the Air Force. The photographs in the book will probably be new to most readers.

*Skyraider* is a worthwhile addition to an established series, and while several books have been written on the A-1, this treatment probably covers the plane, its career and its crews in more personalized detail than any other effort since Zip Rausa's *The Douglas A-1: The Flying Dump Truck*.

Lehman, John F., Jr. *Command of the Seas: Building the 600 Ship Navy*. Charles Scribner's Sons, Macmillan Publishing Co., 866 Third Ave., New York, NY 10022. 1988. 464 pp. Illustrated. \$21.95.

After leaving what he calls "the best job in the world" in 1987, former Secretary of the Navy Lehman wrote this operational memoir of his six years in office. Arguably the most visible and productive of the Navy's civilian leaders, John Lehman set goals for himself and his service and had the satisfaction of meeting many of them before he departed. There were also many disappointments, and Lehman pulls no punches in telling how he fought his battles in the Pentagon and during the Reagan presidency.

The book gives a tantalizing view of the inside battles and

confrontations among the Pentagon policy makers. Lehman describes his world-class engagement with Paul Thayer over carriers, and his incredible account of Admiral Hyman Rickover's departure will leave the reader shaking his head in disbelief. Lehman also discusses the combative contract negotiations between the Navy and General Dynamics for the *Trident* and SSN-688-class submarines in 1981.

Operationally, Lehman's book gives many nuggets about the Falklands, Grenada, Lebanon and Libya. The final chapters detail events in the Persian Gulf, the lessons learned from the *Stark* and *Vincennes* episodes, and where the author hopes the Navy will go in the future. *Command of the Seas* is a unique, worthwhile example of current history by one of the men who was on the inside and participated in making that history.

Jackson, A. J. *Blackburn Aircraft Since 1909*. U.S. Naval Institute, Annapolis, MD 21402. 1989. 576 pp. Illustrated. \$32.95.

Taylor, H. A. *Fairey Aircraft Since 1915*. U.S. Naval Institute, Annapolis, MD 21402. 450 pp. Illustrated.

USNI is to be congratulated for bringing back this authoritative series, originally published by Putnam in the U.K. Newly updated, these books cover specific companies in great detail, giving a history of the company and individual presentations of all the aircraft produced by that firm.

Besides the fact-filled text, each book contains hundreds of unique photographs showing the subject aircraft during development and in operational use. With a complete collection of the series, the aviation historian has a virtual encyclopedia of Anglo-American aviation.

Smith, Peter C. *Dive Bombers in Action*. Sterling Publishing Co., Inc., 2 Park Ave., New York, NY 10016. 160 pp. Illustrated.

This book is a good overall view of the role and development of the dive-bomber, 1918-50, with the emphasis on WW II. There are rare photos and details of many countries' use of this specialized type of warplane. The author has established himself as an authority on dive-bombing history and development, with several books on the subject.

Smith credits the British on the western front in WW I with actually developing and using the dive-bombing technique. He allows that the Marines further developed dive-bombing during their Central American campaigns of the 1920s. The U.S. stayed with the technique, but the British failed to keep up with it and were caught without up-to-date aircraft at the outbreak of war in 1939.

*Dive Bombers in Action* discusses dive-bombing theory with the inclusion of useful drawings and a unique chapter on the development of bombing sights. There are glimpses into German, Italian, French, Japanese and U.S. bombing squadrons and their individual approaches to combat action.

This is an interesting book, filled with rare, unexpected details.

## National Aviation Hall of Fame

The National Aviation Hall of Fame, Dayton, Ohio, enshrined four new members in July 1989. Among them, Naval Aviator #33 Admiral Marc A. Mitscher was recognized for the first aircraft takeoff and landing on *Saratoga* (CV-3) in 1928 and as the first commanding officer of *Hornet* (CV-8). Later he was responsible for Task Force 58's capture and occupation of the Marshall Islands in WW II. Other enshrinees included USAF Brig. Gen. Frank K. Everest, Jr., Lloyd C. Stearman and Chance M. Vought.

### Pirie Award

AC1(AW) Michael D. Filz of *Coral Sea* (CV-43) received the 1988 Vice Admiral Robert B. Pirie Award as the Navy's top air traffic controller. In the award citation, he was noted as being more than a top-flight air controller. As a supervisor, he insured that his controllers were fully trained prior to the carrier's deployment to the Med in 1987. That training paid off for him and his team as the *Coral Sea's* controllers notched up six perfect scores on a series of six graded exercises. Filz said, "I have the best air traffic crew on the East Coast. We've been together over a year now and . . . I'm proud to be part of this team."

The award was established in 1975 by Eaton Corporation, which produces air traffic control processing and display systems.

## SecDef Phoenix Award

The Aircraft Intermediate Maintenance Department (AIMD) at NAS Oceana, Va., was presented a 1989 Secretary of Defense (SecDef) Phoenix Award for maintenance excellence. It was the only Navy activity of the six awardees and the first AIMD ever to receive the award.

The SecDef maintenance awards program was established to enhance the role of maintenance in keeping our forces ready and sustaining them in combat. Activities are nominated in three categories according to size and must go through several levels of competition before being considered for the award.

### Isbell Trophy

The 1988 Captain Arnold Jay Isbell Trophy for overall excellence and superior performance in air antisubmarine warfare was awarded to: HS-5, HSLs 36 and 44, VP-49 and VS-22 in the Atlantic Fleet; and HS-12, HSLs 83 and 45, VP-50 and VS-33 in the Pacific Fleet.

Sponsored by the Lockheed-California Company, the award honors the ASW commander under whose leadership planes and escort carriers operating in the Atlantic during WW II developed into a powerful combat force. Capt. Isbell was killed in action in 1945 while serving aboard the aircraft carrier *Franklin*.

# WEATHER FRONT

## Advection and Upslope Fog

Advection and upslope fog are similar weather elements which annually disrupt cross-country flights, training schedules and holiday air traffic. Advection fog is associated with air masses and frontal systems. Upslope fog forms as the result of air cooling to the saturation point as it is lifted over higher level terrain. Advection and upslope fog in the continental U.S. are more likely to occur during winter months and the transition months of spring and fall. Unlike ground fog that is localized and dissipates shortly after sunrise, advection and upslope fogs are more dense and cover large geographical areas. If meteorological conditions are in proper agreement, the fogs may persist for days.

Advection fog forms when warm air passes over a cooler ground or ocean surface. Most PacFleeters have operated in various degrees of fog in the cold waters off San Diego. Once formed, it may drift inland with the prevailing winds for considerable distances until it encounters the coastal mountain range. It has been suggested that fog formation in the SoCal Op Area

By Capt. Neil F. O'Connor, USN(Ret.)

coincides with carrier qualifications, but the assertion has yet to be proven. Advection fog is common along the coast of New England. It is particularly intense off the Grand Banks and Newfoundland in early summer. Southerly surface winds which are warmed as they cross over the Gulf Stream are quickly cooled as they pass over the chilly Labrador Current. The resultant drop in air temperature to the dew point temperature level is responsible for the development of fog formations that have been known to persist for several weeks.

Upslope fog, particularly over the U.S. during the winter months, occurs when



a southerly flow of air from the Gulf of Mexico moves northward toward the Great Lakes. As the warm air ascends as it encounters higher ground, it is cooled, and fog forms when the temperature drops to the dew point. If the ground over which the warm air has traveled has been very cold or has snow cover, the process is accelerated. Unlike ground fog, moderate winds are not a factor in dissipation. However, if the winds increase sufficiently, the ensuing turbulence will result in a stratus cloud deck. In either situation, large portions of the eastern half of the nation can be blotted out, making the search for an open airfield a difficult task!

## NFO-to-Pilot Transition Program

The Naval Flight Officer (NFO)-to-Pilot Transition Program has been expanded to include all Naval Air communities in response to interest from the fleet. The program is designed to offer a limited number of NFOs the opportunity to enter pilot training. A maximum of 36 NFOs will be selected each year by a board which will meet in March 1990, and annually every April thereafter.

See NAVOP 104/89 for complete eligibility criteria.

## Blue Angels Openings

The Navy Flight Demonstration Squadron, *Blue Angels*, is accepting applications for the 1990 and 1991 show seasons. YN1, YN3, JO2, DM2 and PH2 billets are open during 1990. AE, AD, AT, AZ, AK, AS, AO and airframe ratings at the E5 and E6 levels are available for 1991. Applications for the 1990 season are due by November 1989. Applications for 1991 must be received by April 1, 1990.

For more details, contact the appropriate person: YN - YN1 Carol Franks, AV 922-2583/4; JO, DM PH - Public Affairs Office, AV 922-4784; and aviation ratings - AEC Joe Berry, AV 922-2466/4475. Commercial exchange (904) 452-XXXX.

## WW II Aviation Volunteer Service

The Naval Aviation Museum Foundation, Pensacola, Fla., is eager to locate WW II Aviation Volunteer Service officers who performed administrative duties in squadrons to allow pilots to fly. The candidates were all college graduates between the ages of 24 and 35 and came mostly from the northeast U.S. from various professions. Contact Capt. Earle Rogers at (800) 327-5002 (outside Florida) or (904) 453-2389.

## ACLS

I read JO2 Evans' interesting article on the Automatic Carrier Landing System in *NA News*, March-April 1989. For historical purposes, I can add some tidbits from the 1962 SPN-10 evaluation aboard USS *Midway* and at the Naval Air Test Center (NATC), Patuxent River, Md.

I was a carrier pilot on the staff of the Norfolk Test and Evaluation Unit and project officer for the surface portion. LCdr. Roger Box was in charge and our most significant operational problems were: how to keep the radar signal from "bouncing" around off different parts of the aircraft, thus creating false rates; where to position the so-called "window" where horizon-based reference shifted to ship-based reference; and compensation for ship motion.

NATC solved the wandering radar return problem by designing an open pyramid-shaped reflector for the nose gear, first fixed but later folding, to fit the F-4. Somehow, we settled on an optimum location and size of the "window." Ship's motion consisted of *four*, not three, significant items: pitch, roll, yaw and (vertical) heave. The first three required gyro information and the last was accomplished by an accelerometer mounted under the ship's landing area.

We finally deployed to *Midway* on the West Coast with the F-4 and a last-minute addition of an F-8. By chance, the F-8, piloted by the late USMC Capt. C. C. Williams, made the first hands-off landing using the production SPN-10 - in a calm sea. An interesting thing occurred later on the first rough sea pass when the pilot in the groove waved off because of reversed up-down signals. The manufacturer's representative said he could fix this by reversing a certain wiring polarity. I then asked him if he was aware that no sensible carrier pilot would "chase" a down-pitching deck in close, but might have to chase an up-pitching deck. Somehow, Bell Co. had never heard of this requirement so, after making the reversal, the down commands in close were cut out altogether. Operational testing had proved its worth again!

Paul A. Riley  
5426 Green Springs Dr.  
Houston, TX 77066-2812

## VQ-3 History

VQ-3, NAS Barbers Point, Hawaii, is building up the squadron archives. I am appealing to any TACAMO "old timers" for photos, recollections, squadron newspapers, etc., for documentation of TACAMO's beginnings in VR-21 at Barbers Point to VW-1 at NAS Agana, Guam, to our current home. With transition to the E-6A, it is imperative that EC-130 history be preserved. Any items loaned will be photographed and returned immediately.

Cdr. Vernon C. Lochausen III  
C.O., VQ-3  
FPO San Francisco, CA 96601-6517

## Vietnam Vets

I am trying to locate Canadians who served in U.S. Naval Aviation in the Vietnam war zone.

Fred Gaffen  
Canadian War Museum  
330 Sussex Dr.  
Ottawa, Canada K1A 0M8

## Naval Folklore

Folklorist seeks unpublished personal anecdotes, jokes, legends, stories of the supernatural, chants and songs from active duty and retired Navy and Marine Corps personnel. Contact Dr. C. Burke, Department of English, U.S. Naval Academy, Annapolis, MD 21402.

## USS Coral Sea

On a fishing trip off the coast of Fort Lauderdale, Fla., last February, we aboard the charter boat *Captain Bill* were delightfully surprised at the sight of a "real big fish" - the Navy submarine *Yellowfish* - as she pulled into port. We also saw the huge aircraft carrier *Coral Sea*, with the famous number 43 painted on her side, as she passed us going out to sea.

Many of the crew were on deck and we waved to each other, each busy in our own occupations at the moment. As I looked at them disappearing into the vast ocean, I came to the realization that "guys like me" were able to enjoy the pleasure of fishing so close

to our shores only because of "guys like them," and I suddenly felt so humble and grateful.

Gennaro L. Russo  
42 Bimini Dr. (HCB)  
Toms River, NJ 08757

### NAS Jacksonville

We are celebrating the 50th anniversary of NAS Jacksonville, Fla. A committee is researching its history to put together a one-hour video and commemorative book and to coordinate an air show and other festivities. We want to hear from all interested personnel who served at the air station during the past 50 years.

Commanding Officer  
Box 10, Code OOE  
NAS Jacksonville, FL 32212-5000

### Locator

A PB4Y-1 *Liberator* crashed into the "Great Skellig Rock" off County Kerry, Ireland, on February 27, 1944, killing all 11 aboard. Assigned to VB-110, Fleet Air Wing 7, 12th Fleet Atlantic, Dunkeswell, Devon, England, the crew's remains were not recovered. A memorial ceremony will take place in Waterville, County Kerry, on August 18-19, 1990. I have located 9 of 11

families, but still need to contact the relatives of: Ltjg. John Louis Williams, Jr., from Louisiana; and Ens. John A. Huffman, Jr., from Virginia.

Gerard O'Regan  
The Warplane Research Group of Ireland  
Blath-na-Greine, Ballinlough Road  
Cork, Ireland

### Photos Wanted

I need photographs of Douglas A-4B (A4D-2) aircraft in VMA-211 markings to complete a squadron history prior to the squadron's conversion to AV-8Bs. VMA-211 acquired A-4B *Skyhawks* in late 1957 at Edenton.

Harry Gann  
Douglas Aircraft Co.  
3855 Lakewood Blvd. M/S 7-99  
Long Beach, CA 90848

### Yokosuka Museum

Fleet Activities, Yokosuka, Japan, established an archives center to serve as a museum to document the base's history. We are particularly interested in obtaining historical materials (photographs, momentos, artifacts, etc.) since August 1945. All donations, loans of materials and replies may be addressed to:

Commander, Fleet Activities  
Code 1000B, Archive Project Officer  
FPO Seattle, WA 98762-1100

### VP-8 Cruisebooks

Any ex-VP-8 personnel who wish to have a copy of the 1988 Rota-Lajes deployment cruisebook, send a check or money order for \$15.00 to: VP-8 Tiger Fund, c/o PAO, Patrol Squadron Eight, FPO New York, NY 09501-5904.

### Reunions, Conferences, etc.

**VF-11 (WW II) and VF-111 reunion**, November 16-18, Pensacola, FL. Contact K. H. Enander, 419 Maple St., Port Townsend, WA 98368, (206) 385-7786.

**Navy Aerospace Physiology Assn. reunion**, January 25-27, 1990, Pensacola, FL. Contact LCdr. Dusty Rhodes, 2049 Eastgate Way, Tallahassee, FL 32308, (904) 386-6439.

**PBY Blackcat Squadron VP-33 reunion**, November 10-13, Pensacola, Fla. Contact John Zubler, Rt. 2, Box 24, Spring Mills, PA 16875, (814) 422-8296.

**SC-1 Seahawk and OS2U Kingfisher pilots and crews (WW II to 1949) reunion planned**. Contact C. Jasinski, 3150 Huelani Pl., Honolulu, HI 96822, (808) 988-6431.

**VF-80 (WW II) reunion planned**. Contact B. W. Barns, 276 Cambridge Dr., Longwood, FL 32714, (407) 774-0454.

**VB/VPB-144 reunion**, late 1989 or early 1990. Contact W. E. Scarborough, 45 N. Port Royal Dr., Hilton Head Island, SC 29928, (803) 681-7158.

## The Association of Naval Aviation Photo Contest

The Association of Naval Aviation and its magazine, *Wings of Gold*, is sponsoring an annual photo contest, beginning in January 1989. There will be six bimonthly winners and end-of-year first, second and third-place winners. The contest is intended to capture on film the exciting world of Naval Aviation, its airplanes, ships and people in the Navy, Marine Corps and Coast Guard. Winners will be announced with their photos in *Wings of Gold* and *Naval Aviation News*. Everyone is eligible except the staffs of the Association of Naval Aviation and *Naval Aviation News*. The ONLY requirement is that the subject matter pertain to Naval Aviation. Submissions can be in black and white

or color, slides or prints of any dimension.

#### Cash Awards

Bimonthly:	\$100
Annual:	
First	\$500
Second	\$350
Third	\$250

Deadlines for submissions for the bimonthly awards are the 1st of February, April, June, August, October and December. The deadline for the annual awards is December 1. Please be sure to include a complete name and address with each entry.

Bimonthly winners will be selected by the staffs of *Wings of Gold* and *Naval Aviation News*. All photos submitted throughout the contest period, whether or not they were

bimonthly winners, will be considered for the annual awards by an expanded panel of judges which will include recognized out-of-house experts in the photography field. This ensures that EVERY ENTRY will get a fresh look. Photographs may be published by the Association of Naval Aviation (ANA) and *Naval Aviation News* and used for promotional purposes by the ANA, but owners retain their rights of usage.

Mail photographs, WITH CAPTIONS, to: Association of Naval Aviation Photo Contest, 5205 Leesburg Pike, Suite 200, Falls Church, VA 22041.







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